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CONTENTS

Aldrich, J. M.	
A New <i>Leucopis</i> from San Francisco.....	152
Annand, P. N.	
A New Species of <i>Adelges</i>	79
Barnes, William, and Benjamin, Foster H.	
Two New Californian <i>Limacodid</i> Moths.....	126
Notes on Some Species of <i>Lepidoptera</i> in Relation to the Stretch Collection.....	127
Addenda to Notes on Some Species of <i>Lepidoptera</i> in Relation to the Stretch Collection.....	164
Blaisdell, Frank Ellsworth, Sr.	
Studies in the <i>Melyridæ</i>	15
New Forms of <i>Coniontis</i>	83
A New <i>Centrioptera</i> from Texas.....	87
A New Species of <i>Dasytes</i> from California.....	184
Chamberlin, Joseph C.	
The <i>Cheiridiinæ</i> of North America.....	32
<i>Hesperochernes lauræ</i> , a New Species of False Scor- pion from California, Inhabiting the Nest of <i>Vespa</i>	89
Chamberlin, W. J.	
A New Species of <i>Pœcilonota</i> from California.....	186
Cockerell, Theodore D. A.	
Anthophorid Bees in the Collection of the California Academy of Sciences.....	49
Bees of the Genus <i>Andrena</i> in the Collection of the California Academy of Sciences.....	57
The Entomology of the Gulf of California.....	139
Bees of the Genus <i>Cœlioxys</i> in the Collection of the California Academy of Sciences.....	145
Some Bees Collected by Mr. P. H. Timberlake at Riverside, California	179
Some Parasitic Bees of the Pacific Coast Region.....	180
Cole, Frank R.	
Notes on the Dipterous Family <i>Asilidæ</i> , with Descrip- tions of New Species.....	7
Duncan, Carl D.	
<i>Dolichovespula diabolica</i> Sauss. and Its Supposed Variety <i>fernaldi</i> Lewis.....	40
Spiracles as Sound-Producing Organs.....	42

Emerton, J. H.	
New California Spiders	29
Ferris, G. F.	
The Nymphs of Two Species of Chermidæ.....	24
Jones, Wyatt W., and Brisley, Harold:	
Field Notes Concerning a Few Arizona Hispinæ.....	174
Knaus, W.	
Three New Forms of Coleoptera.....	182
Malloch, J. R.	
Two New Cordylurid Flies from the Pacific Coast.....	14
Muir, Frederick.	
On the Genera of the Cixiidæ, Meenoplidæ, and Kin-	
naridæ	97, 156
Nagel, Paul.	
A New Form of Lucanoid Coleoptera.....	72
Spruyt, F. J.	
Observations on the Egg-Laying Habits of Saxinis	
saucia Lec.	176
Spuler, Anthony.	
North American Species of the Genera Sphaerocera	
and Aptilotus.....	66
Van Dyke, Edwin C.	
New Species and Subspecies of Cychrini from West-	
ern North America.....	1
Studies of Western North American Carabinæ, with	
Descriptions of New Species.....	111
Notes and Descriptions of New Species of West	
American Hispinæ	170
Observations Concerning Certain Coleoptera from the	
Yosemite Valley, California, Made During the	
Summer of 1921.....	175
Van Duzee, Edward P.	
Characters of Two North American Chermidæ.....	22
Van Duzee, Millard C.	
A New Western Dolichopodid.....	43
North American Species of Paraphrosylus Becker, a	
Subgenus of Aphrosylus Walker.....	73
Dolichopodids, New or Imperfectly Known.....	153
Economic Notes, Edited by E. O. Essig.....	45, 93, 142, 188
Editorial Department.....	46, 95, 144, 191

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NEW SPECIES AND SUBSPECIES OF CYCHRINI (CARABIDÆ-COLEOPTERA) FROM WESTERN NORTH AMERICA

BY EDWIN C. VAN DYKE
University of California

***Scaphinotus elevatus neomexicanus* Van Dyke,** new subspecies.

This subspecies differs from the typical *elevatus* by being of a deep violet black color; by being proportionately narrower; the prothorax smaller, less than two-thirds as long at the middle as broad, with a broad somewhat convex and cordate disc, the lateral wings abruptly elevated from the sides, not gradually as in the other, but little arched and with the margin almost equally thickened throughout; the elytra with the margins only moderately explanate in the humeral region and rather narrow elsewhere, the disc broadly convex and quite flattened at the middle, and the striae deep and closely crenulately punctured. When viewed from behind, the contrast in outline between this and the typical form is most marked. Length 19 mm., breadth 8.5 mm.

Type, female in my collection, collected at Cloudcroft, Sacramento Mountains, New Mexico, altitude 8000 feet, July 5, 1917, by Professor W. M. Wheeler and by him kindly presented to me.

In color, this insect is much like the subspecies *tenebricosus* Roesch., but in appearance and structure shows a closer approach to *Scaphinotus mexicanus* Bates. To neither *Scaphinotus snowi* Leconte nor *Scaphinotus kelloggi* Dury, both of which are also from New Mexico, does this form show any close relationship. So very distinct, indeed, does it appear that one might consider it entitled to specific standing. In view of the known variability of *Scaphinotus elevatus* Fab. and because of the belief that certain other varieties approach it, I think that it is best to place it as I have done.

Scaphinotus catalinæ Van Dyke, new species.

Elliptical in shape, moderately flattened; black with upper surface a dull violet. Head narrow and moderately elongate, twice as long as broad, one-half breadth of prothorax, supraorbital setæ prominent; eyes moderately prominent; antennæ reaching middle of body, apical half of fourth joint finely pilose; gular setæ present. Prothorax two-fifths as long at middle as broad at widest point; apex emarginate; base with middle third transverse and outer portions projecting obliquely backwards and upwards; sides moderately explanate and elevated in front, gradually increasing in both width and elevation posteriorly and ending in a broad posteriorly directed wing, which is but little elevated above the disc; lateral margin thickened, broadly arcuate in front and oblique, straight and convergent posteriorly, the lateral setigerous puncture at the middle and slightly within the margin; the disc moderately convex, with median longitudinal line distinctly impressed, rather finely strigulose anteriorly, coarsely, irregularly and sparsely punctate posteriorly. Elytra over three times as long as the prothorax at its middle, seven-tenths as broad as long; elliptical, humeral area broadly rounded; margin broad at humeri and of moderate width elsewhere; the disc fairly convex; striæ fourteen in number, distinctly impressed, irregular at sides and towards apex and rather coarsely closely punctured. Beneath coarsely, sparsely punctured at sides, with two anal setæ on each side, the posterior coxal plates with the posterior setæ present and the anterior absent. Length 14 mm., breadth 7 mm.

Male with first three tarsal joints of anterior legs broadly dilated and entirely papillose beneath.

Type, male in my collection, secured near the top of Mt. Lemon, Catalina Mountains, Arizona, July, 1912. Allotype female and one paratype male and paratype female are also in my collection and other paratypes are in the collection of Cornell University and the California Academy of Sciences.

This insect differs from its closest relative, *Scaphinotus vandykei* Roesch., by being less shining; by having the prothorax narrower, with the lateral wings both narrower and less elevated, the punctuation of the disc sparser and more confined to the posterior half; the elytra more elliptical, the humeral area more evenly rounded, the sides less parallel, and the striæ definitely defined. *Scaphinotus roeschkei* Van Dyke somewhat approaches this species particularly as regards the elytra but it has a flatter, less winged and more densely uniformly punctured prothorax. In the table given by Dr. Roeschke¹, *catalinæ* should be placed between *roeschkei* and *vandykei*.

¹ "Monographie der Carabiden—Tribus Cychrini," by Dr. med. Hans Roeschke, Anns. Mus. Nat. Hungaric, V (1907).

Scaphinotus johnsoni Van Dyke, new species.

Black, subopaque, head and prothorax slightly æneous, elytra chocolate brown with margins a metallic green. Head slightly less than twice as long as broad, front convex and somewhat irregular anteriorly, genæ distinct and obtusely notched in front of the eyes, the eyes moderately prominent. Prothorax distinctly broader than long, slightly more than one-half as broad as elytra, apex shallowly emarginate and narrowly margined, sides broadly rounded in front, thence almost straight and converging to near base and from there parallel to posterior angles, the side margins narrow and reflexed, broader in front, the disc almost flat and finely wrinkled, the anterior and posterior transverse and median longitudinal impressions distinct though shallow. Elytra seven-tenths as broad as long, elliptical, slightly convex, margin moderate and moderately reflexed, disc with nineteen striæ, the third, sixth, ninth and twelfth somewhat interrupted and formed by the more or less complete coalescence of elongate punctures in the center of previously broad intervals, the striæ between the above regular, the thirteenth to the nineteenth irregular, stria punctures barely discernible, the intervals convex, the inner continuous, the outermost irregular and catenulate in places. Beneath moderately smooth, posterior coxal plates with both basal and subapical setigerous punctures. Length 18 mm., breadth 6 mm.

Type, a unique female with right anterior leg and most of antennæ lacking. It was collected in the Olympic Mountains of Washington by Professor Meany of the University of Washington and given to the late Professor O. B. Johnson, who very kindly presented it to me.

This very interesting species is a member of the subgenus *Brennus*, the second species to be recorded from the State of Washington, all others of that subgenus heretofore secured from that state being referable to *Scaphinotus marginatus* Fisch. It differs from all phases of this last-mentioned species not only by being quite subopaque but by having a peculiar type of elytral sculpture. It has at least five more elytral striæ, every third one formed by the extension and confluence of the punctures of the former broad intervals; has more regular median striæ and lacks the definite stria punctures which in the other so often produce a crenulation or interruption of the intervals.

Scaphinotus subtilis bullatus Van Dyke, new subspecies

This subspecies differs from the typical *subtilis* by being very much larger and more subopaque; by having the sides of prothorax posterior to the most dilated portion, almost straight and convergent posteriorly; the elytra quite bullous and with both striæ and punctures very fine, the striæ hardly perceptible in some specimens. Male, length 23 mm., breadth 10 mm.; female, length 26 mm., breadth 12 mm.

Male with tarsal joints of anterior legs long and but little dilated, the first with an elliptical papillose area at apical third beneath and the second with an elliptical papillose area occupying the median three-fourths beneath, the following joints without papillæ.

Type, male, and female allotype in my collection, taken by myself at the mouth of Roaring River, South Fork of Kings River Cañon, Fresno County, California, altitude 5000 feet, June 4, 1910. Several paratypes collected at the same time and place are also in my collection.

Scaphinotus subtilis grandis Van Dyke, new subspecies

Similar to the preceding in size and general opaqueness but having the elytra proportionately broader and with the striæ poorly defined, the punctures, however, very distinct and more or less arranged in rows which average 24, or double the number found in the typical form, due to rows of punctures being developed in the intervals as well as in the striæ. In the larger females there is a tendency for the striæ to completely disappear and for the punctures to lose their regular arrangement, particularly laterally. Male, length 23 mm., breadth 11 mm.; female 26 mm., breadth 13 mm.

Male with tarsal joints elongate but slightly more robust than in preceding subspecies, but with the first and second joints of anterior pair of legs papillose as in that.

Type, male, and allotype, female, in my collection, collected by Mr. Ralph Hopping and by him kindly presented to me. The specimens were captured at Cedar Creek, Tulare County, California, June 10-20, 1905. Several other specimens, paratypes, agreeing with the above are in Mr. Hopping's collection. A number of specimens of the same size as the typical *subtilis* but with the evident sculpturing of *grandis*, smaller phases of the same in fact, are also in the collection of Mr. Hopping and myself.

Scaphinotus subtilis Schaum is undoubtedly an offshoot of *Scaphinotus striatopunctatus* Chaud., the latter restricted to the coastal area of middle California, the former ranging along the western flanks of the Southern Sierras. The typical *subtilis* is the somewhat depauperized phase which dwells in the warmer and less humid foothill region, *bullatus* and *grandis* phases which have worker higher and farther into the mountains. *Grandis* shows the closest approach to the parent stock, *striatopunctatus*.

Scaphinotus longiceps Van Dyke, new species

Elongate, head very much lengthened, antennæ and legs of moderate length, black, shining, the elytra with a faint purplish color in good light. Head narrow, cylindrical, three times as long as broad, one-fourth longer than prothorax and one-half its width, portion back of eyes two-fifths entire length of head; genæ moderately prominent, front with medial longitudinal convex area and two deep lateral sulci, vertex and occiput shallowly transversely wrinkled; eyes rather small and almost flat; antennæ reaching beyond middle of body, the scape not reaching posterior margin of eyes. Prothorax slightly shorter than broad, one-half width of elytra, apex slightly lobed at middle and finely margined, anterior angles somewhat projecting and obtusely pointed, side margins finely and evenly margined, fairly straight and diverging backwards for first fourth, thence rounded and convergent until near base where suddenly sinuate, the hind angles prominent, acute and with rounded apices, the propleuræ plainly observed from above; disc with anterior and posterior transverse impressions well defined, median longitudinal impression deep, the area on either side very convex and quite smooth. Elytra with breadth somewhat more than two-thirds of length (8 mm. to 11 mm.), elongate oval, fairly convex, rather finely and evenly margined, the disc with fourteen deep and finely punctate striæ on each elytron, the intervals convex and with an area of broken and contorted lines between fourteenth striæ and lateral margin. Beneath moderately smooth, posterior coxal plates with both basal and subapical setigerous punctures. Length 19 mm., breadth 8 mm.

Male with terminal palpal joints narrowly securiform; the first three tarsal joints of front pair of legs not perceptibly dilated, the first with a few squamæ at the extreme apex and the second and third with a small squamose area on the apical half.

Type, a unique male collected in the interior of Humboldt County, California, May 15, 1901, by Mr. F. W. Nunenmacher, and now in my collection.

This remarkable species belongs in the subgenue *Neocychrus* of Roeschke, in association with *Scaphinotus angulatus* Harris and *Scaphinotus behrensi* Roeschke. It differs from the other two species, and in fact from all the Cychrini, in having a very long, narrow and cylindrical head, three times as long as broad. It also has a much smaller prothorax than either of the two species associated with it.

Scaphinotus angulatus maritimus Van Dyke, new subspecies

This subspecies differs from the true *angulatus* in being jet black, with but the faintest tint of purple, the true species being of a brilliant copper color.

Type female in my collection, collected by myself in the forests near Port Angeles, Washington, May 25, 1907. Two other specimens, paratypes, collected by Mr. Joseph Slevin at Mel-bourne, Wash., July 29, 1911, and Olympic National Forest, August 3, 1911, are in the collection of the California Academy of Sciences.

The following table will separate the members of the subgenus *Neocychnus* Roeschke:

Head but twice as long as broad, front more or less cristate, prothorax moderately large.

Each elytron with fourteen complete, regular, deep and finely punctured striae, the anterior part of lateral margin of prothorax slightly crenate,

Entire upper surface a metallic purple.....*angulatus* Harris.

Entire insect black.....*angulatus maritimus* new subspecies.

Each elytron with from seventeen to twenty shallow, moderately deeply punctured crenulate and more or less interrupted striae, the anterior part of lateral margin of prothorax distinctly crenate, black with elytra tinged with purple.....

.....*behrensi* Roeschke.

Head three times as long as broad, front convex, not cristate, prothorax small, glossy black.....*longiceps* new species.

Scaphinotus angulatus Harris in its more typical or metallic phase is found in western British Columbia including Vancouver Island, the Puget Sound basin of Washington and the Willamette Valley of Oregon. The black phase, *maritimus*, has been found at Port Angeles, Washington, and in the wet belt west of the Olympic Mountains and Coast Range of Washington as at Hoquiam and Lake Quinault. *Scaphinotus behrensi* Roeschke lives in the coastal area from Myrtle Point, Oregon, to northern Sonoma County, California. The third species, *Scaphinotus longiceps* new species, has been found so far only in the interior of Humboldt County, California.

Onthophilus lecontei Horn. In Zoe, Vol. III, 1893, p. 4, I reported this species, under the name of *Tribalister marginellus* Lec., in my list of the "Histeridæ Observed in San Diego County." This error arose from the fact that a number of the species collected at that time were wrongly identified for me. At Poway, where I took my specimens, the species appears to be very rare. They were taken at an elevation of 700 feet, under stones in damp places. More recently the species was taken at Salada Beach, San Mateo County, by the late L. R. Reynolds, but under what conditions was not stated. The latter specimen shows some sculptural differences from those taken in San Diego County. The type locality is Fort Tejon, the species being described by Dr. Horn from a single specimen, so the Salada Beach record extends the area of distribution considerably.

FRANK E. BLAISDELL, SR.

NOTES ON THE DIPTEROUS FAMILY ASILIDÆ,
WITH DESCRIPTIONS OF NEW SPECIESBY FRANK R. COLE
Redlands, California

Recent papers by Melander and Curran on robberflies of the subfamily Dasypogoninæ have added greatly to our knowledge of certain genera. There is a wealth of undescribed material in the western United States. A study of the Asilidæ in the collection of the California Academy of Sciences has revealed a number of interesting new forms, some of which are described in this paper. In some genera the hypopygium is inverted, as in *Lasiopogon*, the actual tergal portion (the epandrium) being sternal in position.

Lasiopogon actius Melander. I have one specimen of this species, taken at Rockaway, Oregon, August 19, 1919 (M. M. Reeher). The type locality is the sea beach near Seaview, Washington.

Lasiopogon fumipennis Melander. Among the specimens studied there are two females from Horse Lake, Oregon, altitude 6000 feet, taken by J. C. Bridwell, July 25, 1909; one female, taken by the writer at Hood River, Oregon, July 2, 1917. Melander had only females, and as the male is worthy of description some notes are given below and one specimen is made a neallotype.

Male. Length 5-6 mm. Very nearly like the female, but differs in the generally lighter color of pollen and the paler wings. Head more gray pollinose than brown. The male genitalia are remarkable, being broader than the abdomen and shining, dark red in color, with the usual patch of pile on the ninth sternite black in color; the genital styles are rounded and bulging (see fig. 1).

Neallotype, male, No. 1574, in collection of California Academy of Sciences, taken July 1, 1919, by C. L. Fox.

The specimen designated was taken in the type locality, Paradise Valley, Mt. Rainier, Washington, 8,000 feet elevation.

Lasiopogon aldrichii Melander seems to be quite common on Moscow Mount, Idaho. On June 23, 1919, I was one of a party, with Dr. Aldrich and Dr. Melander, that ransacked this locality for Diptera. I collected 18 specimens of this interesting species on that occasion.

Lasiopogon monticola Melander. I took a male of this species on Moscow Mount on the same day the above species was collected, and have a specimen taken at Horse Lake, Oregon, July 25, 1909, by J. C. Bridwell. In the California Academy collection there are specimens of both sexes taken in Paradise Valley, Mt. Rainier, Washington, on July 1, 1919 (C. L. Fox) and July 25, 1920 (E. C. Van Dyke).

Lasiopogon arenicola Osten Sacken, of which I have a paratype, was taken on the sand dunes near San Francisco. The species is still quite common in the type locality, but like other species, apparently quite local, will disappear with the spreading of the city over this interesting faunal area.

Lasiopogon littoris Cole, new species

Male. Length 5.5 mm. A small, black, silvery gray pollinose species, with pile and bristles all white. Antennæ black, rather unusual in shape (see fig. 2), the arista slightly longer than the third joint, pile beneath the first and second joints white. Facial convexity reaching almost to the antennæ, the mystax long and white. Head whitish gray pollinose, the frons, occiput, and beard white pilose. Palpi very small, black, without long pile.

Thorax and scutellum silvery white pollinose, with scant white pile and white bristles. No vittæ on mesonotum. Disc of scutellum flattened. Halteres yellowish white, the base of stem brownish.

Abdomen silvery gray pollinose and sparsely white pilose, the bases of second to fifth tergites semishining black, appearing more definite from certain angles. Genitalia black, gray pollinose and white pilose, with a characteristic fringe of dense white pile on the hypandrium; the tergal styles (surstyli) very large, rounded at the ends, but with a sharp angle below (see fig. 3). Legs black, gray pollinose, with white pile and bristles. Wings hyaline.

Holotype, male, No. 1575, in collection of California Academy of Sciences, taken April 25, 1919, by E. P. Van Duzee.

Type locality, Pismo, California.

The species is described from an unique male. It is a very distinct form. In a recent table of species published by Melander (Psyche, Oct., 1923) it would run to couplet 4, but is quite different from *actius* and *arenicola*. The antennal structure is suggestive of the genus *Lissoteles*, but the face and genitalia are typical of *Lasiopogon*.

Holopogon atrifrons Cole, new species

Male and female. Length 5-6.5 mm. Very nearly allied to *guttula* and *phenotatus* and keying to these species in Back's table. Male with noticeably narrowed frons and face, both dull black in color; in the female the face and frons thinly gray pollinose. Antennal style about three-fourths as long as the third joint. Pile of head, mesonotum, and scutellum wholly black, longer and more abundant in male, especially on the face. Both sexes have some white pile on the wholly black legs.

Holotype, male, No. 1576, and allotype, female, No. 1577, in collection of California Academy of Sciences, taken July 16, 1920, by F. R. Cole.

Type locality, Mill Creek Canyon, San Bernardino County, California.

There are several paratypes, taken with the types. Some of these specimens have the extreme bases of the tibiæ reddish. *H. tibialis* Curran has longer pile, the inner side of the front tibiæ short, dense, yellow pilose, etc.

Melander's recently published table of species for the genus *Dioctria* is a very good one, although it may be a little difficult to place females of some of the species. I have found *Dioctria nitida* Williston to be the commonest species in Oregon and California. *Dioctria vertebrata* Cole may prove to be a variety of *pusio* Coquillett; I have both forms from California, but no males of *vertebrata*. *Dioctria rubida* Coquillett may occasionally be taken in Mill Creek Canyon, San Bernardino County, California, in late summer.

There is a male of *Dioctria doanei* Melander in the collection of the California Academy of Sciences, swept from Ceanothus, near summit of Mt. Wilson, California, June 6, 1916, by Harold Morrison. I have two females of *Dioctria sackeni rivalis* Melander, taken at Dodson, Oregon, July 8, 1923, by C. D. Duncan; taken with these is a pair in copula, the male a typical *sackeni*, with the femora largely yellow.

In the collection of the California Academy of Sciences there is a female of *Cophura pulchella* Williston, taken on Mt. Timpanogos, Utah, July 8, 1922 (E. P. Van Duzee), also a female of *Cophura trunca* Coquillett, taken in Mill Creek Canyon, San Bernardino County, California, September 22, 1923 (E. P. Van Duzee).

The type series of *Metapogon setiger* Cole was taken at Dee, Oregon, in the upper Hood River Valley. Melander records the species from Washington, Idaho, and California. A pair of this species was sent to Dr. Mario Bezzi, who states that *M. setiger* and *M. pictus* Cole (a typical *Metapogon*) are certainly not congeneric. I leave it to the monographer to erect a new genus for *setiger*.

Diclonus sparsipilosum Back was described from two males taken at Bozeman, Montana. There are specimens of this species in the collection of the California Academy of Sciences, from Gold Lake, Sierra County, California, July 27, 1921 (C. L. Fox), and from Lower Lake, Lake County, California, May 13, 1922 (E. P. Van Duzee).

Triclis tagax Williston is particularly abundant on the hills west of Stanford University during the early summer.

Myelaphus lobicornis Osten Sacken may be added to the list of Oregon Asilidæ. In the California Academy collection there are two specimens, one taken at the "P" Ranch, Harney County, Oregon, June 23, 1922 (E. C. Van Dyke), the other taken at Baker, Oregon, June 30, 1922 (E. C. Van Dyke).

Cyrtopogon tacomæ Melander is represented by three specimens in material studied, two from Paradise Valley, Mt. Rainier, Washington, August 7, 1919 (C. L. Fox), and one male from Burns, Oregon, taken May 12, in the collection of the Oregon Agricultural College. *C. perspicax* Cole was found in large numbers by E. C. Van Dyke in Muir Woods, Marin County, California, May 9, 1920. Dr. Van Dyke took a long series of *C. callipedilus* Loew in the Yosemite Valley, California, from May 20 to June 12, 1921. The same collector, together with W. J. Chamberlin of Oregon Agricultural College, collected a large series of *C. willistoni* Curran in the Stein Mountains, Harney County, Oregon, June 24, 1922.

***Cyrtopogon nitidus* Cole, new species**

Length 7 mm. Male. A shining black species. Head and appendages black. Third antennal joint longer than the first two combined, the style very short (see fig. 4). The callosity of the face, unusually large, filling almost the entire face, from side to side and from oral margin to base of antennæ. Central part of face with coarse, silky white pile which curves downward, the pile on either side black. Frons and upper occiput long black pilose; the beard white.

Scutellum shining black and yet flattened. Anterior portion of mesonotum inside humeri, and a narrow median line, golden pollinose. Pleura with a few pruinose spots, the meso- and pteropleura wholly shining. Sparse pile of mesonotum and scutellum black. Knob of halteres reddish, the stem brown.

Abdomen shining blue-black; some sparse pale pile on sides of tergites, longer on the first two; most of the abdominal pile very short, black in color. Posterior corners of tergites 2 to 5 with small silvery pollinose spots. Genitalia black, the surstyli plain, the gonostyli with an apical projection (see fig. 5). Legs black; the fine short pile on under side of tarsi and front and hind tibiæ golden yellow; bristles of legs black; pile of femora white and black; coxæ gray pollinose, white pilose. Wings hyaline, slightly virescent; r-m cross vein before middle of cell 1st M_2 .

Female. Length 7-8 mm. Very similar to the male. Mystax coarse and wholly black, the golden pollinose area on the mesonotum more distinct.

Holotype, male, No. 1578, and allotype, female, No. 1579, in collection of California Academy of Sciences, taken July 4, 1920, by E. P. Van Duzee.

Type locality, Forks, Clallam County, Washington.

There are three paratypes, a male and two females, taken with the types. This species is not a typical *Cyrtopogon*; the structure of the face, the very short antennal arista, the general lack of pollen on the body, and the flattened, shining scutellum, are unusual characters.

***Ablautus squamipes* Cole, new species**

Male. Length 8 mm. Head black, the occiput gray pollinose and white pilose. Antennæ black, long yellow bristles below on first joint; third joint longer than first and second combined. Face gray pollinose, largely covered by the dense mystax, which is mostly white, but yellow and brown over the oral margin. Frons golden brown pollinose, with white pile above.

Thorax black, largely golden brown pollinose, silvery on the humeri and just behind them. Pleura largely brownish pollinose, the hypopleura gray, with white pile. Metanotum gray pollinose. Bristles of mesonotum yellowish. Scutellum gray pollinose, with whitish, up-curved bristles on the margin, the base with a small, oval, shining black spot. Halteres dull yellow, brown at base of stem.

Abdomen black, gray pollinose, tinged brown on basal portion of second, third, and fourth tergites; tergites 2 to 6 with a black, bare spot in middle, near base; sides of tergites with larger black spot; sides of tergites and the venter with coarse white pile. Hypopygium small, blackish brown, the tergal portion projecting beyond the ventral. Femora and tibiæ black, with rather dense, coarse white pile and white bristles, the bristles especially long on middle tibiæ; tarsi reddish in ground color, bristles and pile white; claws black; last two joints of front tarsi with long, close-set scales, mostly brown in color, but black and narrow below. Wings hyaline and normal in venation; r-m cross vein a little beyond middle of 1st M_2 .

Holotype, male, No. 1580, in collection of California Academy of Sciences, taken March 23, 1917, by V. W. Owen.

Type locality, Chiricahua Mountains, Arizona.

The species is described from an unique male. In Back's table of species it would run to *mimus* O. S., but this species has no scales on the front tarsi and differs in other characters.

***Parataracticus* Cole, new genus**

Very nearly related to *Taracticus*. Head nearly twice as broad as high, face gently convex, the oral margin not prominent; mystax with considerable bristle-like pile which is confined to the lower half of face. Antennæ slender, elongate, segment three about four times as long as first and second combined, bare, with an emargination on the upper side near the apical fourth in which there is a short, forward-pointing bristle. Facial and frontal orbits nearly parallel, the latter slightly emarginate; ocellar tubercle of good size. Abdomen robust, convex dorsally, finely punctate, with small hairs in the punctures; posterior corners of tergites with short bristles, quite conspicuous on first four segments. Scutellum with 6-7 marginal bristles, but the median portion bare. Genitalia small, but easily made out at a magnification of fifteen diameters. Legs rather

robust, the hind tibiæ slightly incrassate; front tibiæ with a claw-like terminal spine; claws long, the *pulvilli* lacking. All cells on posterior margin of wing open.

Genotype: *Parataracticus rubidus*, new species.

***Parataracticus rubidus* Cole, new species**

Male. Length 5 mm. Entire body red, with spots of silvery pollen. First two antennal joints reddish yellow, the third brown, red at base, about four times the length of the first two joints combined; first joint with three or four strong yellow bristles below. Head broad, ocellar tubercle conspicuous, with two diverging yellow bristles on the back portion. Frons golden brown pollinose, silvery on sides. Face silvery pollinose, with a golden tinge, gently convex; mystax of strong and scattered yellow bristles, some few reaching up to base of antennæ. Proboscis reddish brown; palpi reddish brown, very small. A few yellow post-orbital bristles.

Thorax red, the bristles yellow; a broad median brown stripe on mesonotum, with a spot on either side of it. Mesonotum and pleura partly silvery, partly golden brown pollinose; coxæ silvery pollinose. A few pale bristles before the lemon yellow halteres. Scutellum shining red, flat, with rounded margin and rough disc, the sides narrowly silvery pollinose; a clump of 3-4 yellow bristles on margin below each silvery spot.

Abdomen rather short, robust, largely red in color, verging on burnt sienna; tergum punctate and with sparse, short, fine pile in punctures. Narrow lateral margins of tergites yellowish pollinose, silvery on posterior corners of 2, 3, 4, and 5, and with short yellow bristles on these posterior corners, especially strong on first three segments. Genitalia rather small, yellowish red, with a deep cercal emargination on ninth tergite; genital styles simple, curved, slender.

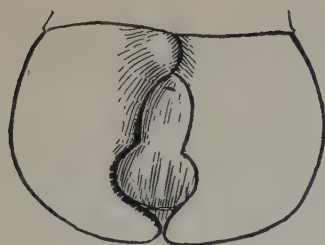
Legs rather heavy, the hind tibiæ noticeably incrassate; front tibiæ with slender, black, terminal claw-like spine. Legs wholly red, with pale yellow and white bristles and with short, reclinate yellow pile; short black bristles on posterior margins of tarsal joints. Claws long, black, strong; no *pulvilli* present. Wings of normal size, costal and subcostal veins yellow, other veins brown; r-m cross vein in middle of cell 1st M_2 ; all cells on posterior margin of wing open, the cell 1st A narrowly.

Female. Practically the same in color and marking as the male. In the type specimen the antennæ are honey yellow, the third joint relatively shorter than in male and with emargination and microscopic bristles nearer tip. Sides of abdominal tergites silvery pollinose. Ninth segment with terminal circlet of brown bristles.

Holotype, male, No. 1581, and allotype, female, No. 1582, in collection of California Academy of Sciences. Holotype taken June 13, 1917, by W. M. Giffard; allotype taken July 27, 1917, by M. C. Lane.

Type locality, Niles Canyon, Alameda County, California. The allotype taken at Bird's Landing, California.

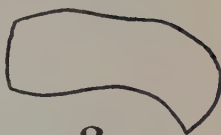
There is a paratype in the Stanford University collection, taken at Palo Alto, June 21, 1892. One other specimen is in the collection of Dr. M. Bezzi, in Italy; Bezzi identified this as an undescribed species in a genus near *Rhadinus*.



1 *L. fumipennis*



2



3

L. littoris

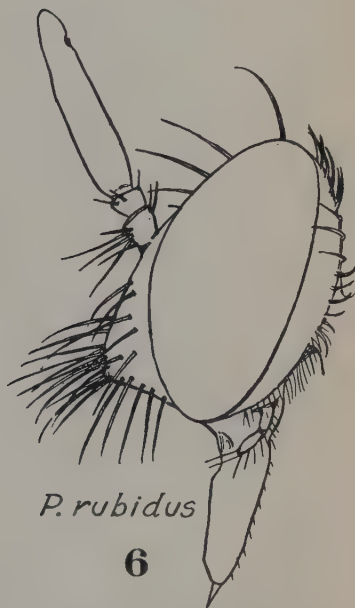


4



C. nitidus

5



P. rubidus

6

Dr. E. C. Van Dyke has presented his entire collection of Coleoptera to the California Academy of Sciences but will retain supervision over them during his life. This is one of the largest and most valuable collections of North American Coleoptera ever assembled on the Pacific coast, being especially rich in Pacific Coast forms, and in the families Carabidæ, Elateridæ, and the forest groups of beetles. The species are represented by large series, showing both the geographical range and the degree of variation. The Van Dyke collection, together with the material in this order already in the museum of the Academy, gives to the California Academy of Sciences a collection of Coleoptera that takes its place among the more important collections of this country, and makes it one that must be consulted by any one working with western species.

TWO NEW CORDYLURID FLIES FROM THE PACIFIC COAST

BY J. R. MALLOCH
Washington, D. C.

The type specimens of the species described in this paper are deposited in the collection of the California Academy of Sciences.

***Cordylura luteola* Malloch, new species**

Female. Glossy yellow. Head yellow, a spot surrounding ocelli, and base of the arista black. Dorsum of thorax with faint indications of a narrow brown vitta along each line of dorsocentral bristles. Abdomen with a narrow black band on posterior margin of each tergite up to fifth, the apical segments entirely black. Legs yellow, apices of mid and hind femora, the greater portion of mid tibiae and all of hind tibiae in type black; in paratype only the apices of hind femora and the greater portion of hind tibiae blackened. Wings with the outer cross-vein and the apices broadly infuscated. Halteres yellow. Bristles and hairs black.

Orbits each with 5 or 6 bristles and 3 hairs; arista thickened at base, plumose; proboscis thick; margin of cheek with one bristle below vibrissa, and another very weak one near posterior margin. Anterior intra-alar bristle absent; presutural acrostichals 2-rowed; stigmatal and propleural bristles present; scutellum with two strong bristles and two very weak apical hairs. Fore femur without anteroventral bristles; mid femur with two or three widely spaced anterodorsal bristles; mid tibia with a strong ventral, one anterodorsal, and two posterodorsal bristles; hind femur with 1-3 anteroventral bristles near apex; hind tibia with one anteroventral, three anterodorsal and three posterodorsal bristles. First vein nearly bare at apex.

Length, 7 mm.

Type, female, No. 1583, Hood River, Oregon, July 28, 1917 (F. R. Cole). Paratypes, Parkdale, Oregon, September 5; Dewatto, Washington, June 7, 1906 (J. M. Aldrich).

This species closely resembles *præusta* Loew, but that species has the legs entirely yellow, and two instead of three pairs of dorsal bristles on hind tibia.

***Megophthalma americana* Malloch, new species**

Male and female. Tawny yellow, shining. Frons with white dusting which is most distinct when seen from behind; third antennal segment brown except at base below; arista brown; palpi and proboscis yellow. Thorax entirely yellow; abdomen concolorous, each tergite with a narrow black hind border, sometimes the dorsum suffused with brownish color. Legs yellow. Wings hyaline. Calyptræ and halteres yellow. Hairs and bristles on body blackish.

Head as in *pallida* Zetterstedt, third antennal segment broadened apically, arista with sparse long hairs; palpi normal. Thorax as in *pallida*, scutellum with two long strong bristles about middle. Processes of fifth sternite but little longer than broad, broadly rounded at apices,

with a few hair-like bristles. Fore femur with a bristle at middle on anterior surface and one at apex on postero-ventral, the ventral surface with fine short hairs; hind femur with one long fine hair at base on ventral surface and a few widely spaced similar hairs on ventral surfaces which are much longer than the other hairs; hind tibia with three anterodorsal and three posterodorsal bristles; apical ventral bristle on hind tibia stout and slightly curved. First vein bristled on apical half; outer cross-vein at about half its own length from apex of fifth.

Length, 5-5.5 mm.

Type, male, No. 1584, Hood River, Oregon, June 21, 1917 (F. R. Cole), Allotype, female, No. 1585, Bovil, Idaho, July 15, 1910 (J. M. Aldrich). Paratypes, one male, Keyport, Washington, August 7, 1905 (J. M. Aldrich); one female, Delaware Water Gap, Pennsylvania (C. W. Johnson).

The genotype, *pallida* Zetterstedt, differs from this species in having the dorsum of thorax with four confluent blackish vittæ, and the postnotum blackish. The entire series of four specimens of *americana* differs in having the thorax entirely yellow and can hardly belong to a variety of *pallida*.

The only other northern species of the genus, *unilineata* Zetterstedt, has been recorded from Alaska. I have not seen it, but it has four scutellar bristles, and the apex of first vein bare, besides differing in other characters.

STUDIES IN THE MELYRIDÆ (Coleoptera)

III.

BY FRANK E. BLAISDELL, SR.

San Francisco, Calif.

R
With the exception of the *Listrus* collected by Mr. Fox, the species described below have been non-descripts in our collections for many years. It is quite amazing the way new species of Melyrids are being discovered. The automobile is in part the cause of this, as collectors can now go to the outlying districts, which were too far away or inaccessible before the completion of the highways. The author has at hand fully a half as many more unnamed species as have been described.

The following descriptions of new species and of one new genus are submitted at the present time.

Pristoscelis vandykei Blaisdell, new species

Form dissimilar in the sexes. Color black; antennæ rufous, distal joints rufo- or nigro-piceous; mouth-parts rufo-piceous and the legs rufo-testaceous; elytra more or less tinged with rufous at apex; abdomen more or less rufous in the female.

Pubescence evenly distributed, moderately dense but not entirely hiding the surface, conspicuous, cinereous in color; uniform and mod-

erate in length and not intermixed with erect hairs or setæ, recumbent. Fimbriæ pale, those of the pronotal margins not closely placed and of moderate length, the elytral longer anteriorly. Surface in both sexes very finely reticulate and rather dull in luster. Punctures distinct, rather small, not very sharply defined and separated by a distance equal to three or four times their diameter.

Male. Elongate oblong, not in the least narrowed anteriorly, about three times as long as wide and less than moderately convex, somewhat depressed. Head large, about as wide as the pronotum, as long as wide, subtriangular; eyes large and moderately convex; the tempora equal in length to and continuing the surface line of the eyes, feebly convex and moderately converging posteriorly. Front plane, very feebly and broadly impressed; apical margin truncate, well defined; epistoma absent; post-labral area membranous and pale in color; labrum transverse, chitinous, feebly arcuate at apex; mandibles not prominent. Antennæ quite heavy, suberrate and extending to about middle of pronotal disk.

Pronotum about a fourth wider than long; a little narrower than the elytra; sides moderately arcuate, apex truncate in moderate circular arc, the base broadly arcuate; angles rounded, continuing the curve of the sides, apex and base; disk moderately and evenly convex from side to side. Elytra oblong, parallel, less than twice as long as wide; base truncate, humeri distinct and rather narrowly rounded, feebly tumid; apex broadly rounded. Abdomen moderately convex, segments subequal in length, very finely and rather densely punctate; pubescence fine, longer, not dense and recumbent; fifth ventral segment distinctly truncate at apex. Legs moderate in length and stoutness; metafemora not stouter than the mesofemora, straight; tarsi rather stout.

Female. Similar to the male except less oblong in form and head and pronotum notably smaller. Head about equal to the width of the pronotal apex; tempora short; eyes not distant from the pronotal apex; post-labral membranous area very short and transverse and less sharply defined from the frontal apex. Antennæ shorter and less robust. Pronotum smaller, not as wide as the elytra. Abdomen moderately convex; fifth ventral broadly and not strongly rounded. Legs somewhat shorter, rather less stout, tarsi noticeably so.

Length (types) 3.4-3.5 mm.; width 1.4 mm.

Holotype, male, and allotype, female, in the author's collection. Collected by Dr. E. C. Van Dyke, in September, 1900, at Irvington, Alameda County, California. Paratypes in the collections of the author and of Dr. Van Dyke.

The present species has not been taken in recent years. Two males and three females have been studied. In *Pristoscelis* the epistoma is said to be absent; the apical margin of the front is well defined from the post-labral membranous area. These characters are quite similar in both *grandiceps* and *vandykei*. The two species differ markedly in facies, coloration and pubescence, but not to any greater extent than do the extreme forms in *Trichochrous*. *Vandykei* is a most interesting addition to the Melyridæ.

Eutricholistra Blaisdell, new genus

Pubescent; epistoma membranous at apex and not defined from the front by a frontal suture. Eyes large as in *Trichochrous*, sparsely setose. Antennæ as in *Trichochrous*. Head and pronotum very coarsely punctate. Lateral pronotal margins not serrulate. Epipleura more or less outwardly reflexed in plane, wider toward base as in *Trichochrous*. Apex of the fifth ventral abdominal segment as in *Trichochrous*. Anterior tibiæ beset externally with short spinules. Ungual appendages about two-thirds as long as the claw, mutually equal and attached nearly their entire length.

The following is a synoptic statement of the genera most closely related to *Eutricholistra*:

Epipleura distinct.....	1
Epistoma distinct.....	1
Epistoma absent, the frontal margin more or less finely beaded throughout the width. Ungual appendages as long as the claws and subequal, but the inner is detached from claw through outer third of its length.....	<i>Pristoscelis</i> .
1. Lateral pronotal margins not serrulate.....	2
Lateral margins serrulate.....	4
2. Epipleura narrow, wider toward base, more or less strongly, outwardly reflexed in plane throughout their length.....	3
Epipleura broad and horizontal, more or less inwardly reflexed in plane toward apex.....	5
3. Antennæ long, strongly serrate and clothed with long sparse and flexible hairs.....	<i>Sydatus</i> .
Antennæ short and not pilose.....	6
4. Prothorax dilated posteriorly, minutely serrulate at the sides, with a close-set fringe of usually pale hairs; anterior tibiæ without stout spinules externally.....	<i>Listrus</i> .
Prothorax widest at middle; side margins strongly serrate, especially anteriorly, without close-set fringe; anterior tibiæ with stout spinules externally.....	<i>Cradytes</i> .
5. Apical angles of the pronotum anteriorly prominent.....	<i>Eudasytes</i> .
Apical angles not prominent.....	<i>Asydates</i> .
6. Epistoma short, membranous and pale; ungual appendages about two-thirds as long as the claws.....	<i>Eutricholistra</i> .
Epistoma longer, chitinous and dark; ungual appendages as long as the claws.....	<i>Trichochrous</i> .

Eutricholistra punctata Blaisdell, new species

Form elongate oblong-oval, moderately convex. Color black; antennæ, mouth-parts, tibiæ and tarsi more or less piceous; epistoma and apical margin of labrum, pale; knees slightly rufous. Pubescence abundant, not dense, rather conspicuous, somewhat coarse and more or less recumbent, moderately long, uniform in distribution and length—in color flavo-cinereous. Hairs apparently recumbent on head and pronotum. Fimbriæ pale, those of the lateral pronotal margins forming a moderately long, close-set fringe, those of the elytra less coarse, longest toward base. Hairs blackish on and about the genital segments.

Head relatively small, about equal in width to the pronotal apex, about as long as wide, subtriangular, muzzle moderately short. Front feebly convex between the eyes; rather broadly impressed toward the epistoma, with a small impunctate area at middle of apex; finely margined against

the eyes; sparsely punctate, punctures large and coarse, slightly denser along the eyes and apical margin. Eyes large, round and moderately strongly convex, facets sharply defined and moderate in size. Antennæ rather short, extending to about the middle of the pronotum, somewhat stout and slightly compressed, not strongly serrate. Terminal joint of the maxillary palpi stouter and more widely truncate at apex than in *Listrus* or *Trichochrous*.

Pronotum about a third wider than long; apex truncate in middle two-fourths; base broadly arcuate; sides slightly converging anteriorly, angles almost continuously rounded with the sides, base and apex; disk rather strongly and evenly convex from side to side; punctures coarse and strong, separated by a distance equal to one to three times their diameter, interstitial surface glabrous throughout. Elytra oblong, moderately convex, about twice as long as wide; base broadly and slightly emarginate; humeri not prominent, slightly tumid and moderately rounded; punctures less coarse than on the head and pronotum, separated by a distance equal to about two times their diameter; surface obsoletely rugose toward apex, the latter rather broadly rounded; sutural angles obtuse. Abdomen moderately convex, somewhat densely punctate at sides of the segments, rather more coarsely so toward apex. Legs moderate in length and stoutness.

Male. Narrower, parallel; pronotum about as wide as the elytra; fifth ventral abdominal segment truncate at apex in middle two-fourths, slightly flattened on disk. Female. Broader, sides slightly arcuate; head smaller, the antennæ shorter and less stout; pronotum somewhat smaller; fifth ventral segment longer and rounded at apex, margin set with blackish hairs.

Length (types) 3-3.5 mm.; width 1-1.4 mm.

Holotype, male; allotype, female, and paratypes in the author's collection. Collected by Mr. F. W. Nunenmacher at Nogales, Arizona, September 14, 1906.

Eutricholistra should follow *Pristoscelis* in our lists. It has the appearance of a *Trichochrous*, but can readily be recognized by its unusually coarse punctuation of the head and pronotum.

Listrus minutus Blaisdell, new species

Size small. Form elongate oval, about three times as long as wide. Color nigro-piceous to black, with antennæ, tibiæ and tarsi piceous. Pubescence very short, very sparse and inconspicuous, slightly fulvous in color; fimbriæ extremely short and inconspicuous; without maculation.

Head as wide as the pronotal apex, about as wide as long, muzzle very short. Front slightly and rather evenly convex, surface very finely wrinkled, punctures not evident. Eyes relatively large and strongly convex. Antennæ extending nearly to pronotal base, gradually incrassate; joints two, six and seven subglobular, sixth smallest; third and fourth about as wide as long, feebly obconical; fifth subtriangular, larger than the contiguous joints; eighth slightly transverse, short; ninth and tenth larger and about as wide as long; eleventh pointed oval, nearly as long as the preceding two taken together. Pronotum about as long as wide, base and apex subtruncate in middle three-fifths; sides rather evenly arcuate, angles rounded, the basal sometimes slightly evident; marginal serrulations very minute and subobsolete; disk quite strongly convex

from side to side, rather finely and not closely punctate; interstitial surface very finely reticulate, gradually becoming reticulo-asperate in about lateral fifth.

Elytra less than three times as long as the pronotum; sides slightly arcuate, subparallel; base feebly emarginate; sutural angles obtuse and each almost rounded; disk more coarsely punctate than the pronotum; punctures separated by a distance equal to one and one-half times their diameter; moderately convex, surface extremely finely reticulo-subasperate. Scutellum small and concolorous. Abdomen very finely punctulate; pubescence fine, sparse and inconspicuous. Legs moderate in length and stoutness.

Male. Narrower and more parallel; fifth ventral segment truncate at apex. Female. Broader, sides more arcuate; antennæ slightly more slender; fifth ventral rounded at apex, but not broadly so.

Lengths (types) 1.9-2.1 mm.; width .6-.8 mm.

Holotype, male, No. 1586, and allotype, female, No. 1587, Museum California Academy of Sciences, collected May 16, 1915, by the author, at Crystal Lakes, San Mateo County, California. Paratypes in the collections of the Philadelphia Academy of Sciences, that of Charles Liebeck of Philadelphia and in that of the author. Forty specimens studied.

Minutus is the smallest described *Listrus*, it is related to *obscurellus* Lec. from which it differs in the shorter and more inconspicuous pubescence, smaller size, and in being less elongate. In *obscurellus* the antennæ are more elongate and the basal joints longer and more obconical. *Punctatus* Mots. is more robust, oblong-oval and less convex, pubescence and firmbræ longer. The parapleura are clothed with whitish hairs in all the three species. *Minutus* was obtained by sweeping buttercups (*Ranunculus californicus*) in the open fields on hill sides.

Listrus foxi Blaisdell, new species

Form elongate, about three times as long as wide. Color black, with a very feeble bluish tinge; tibiæ, tarsi and antennæ more or less piceous. Pubescence dense, short and cinereous. Maculation sharply defined and arranged as follows: a parascutellar spot on each elytron, which may coalesce around the scutellum and so form an oblong spot; a short elongate humeral spot; subbasal fascia represented by a spot at center of each elytron; a submedian transverse fascia that scarcely attains the margin or suture, its edges feebly irregular; a subapical transverse row of four spots and an apical spot. Pronotal macules as follows: a central oblong spot divided into four, two anterior and smaller, two posterior and larger; the lateral vitta broken into two macules. Lateral pronotal and elytral fimbriæ well developed, moderate in length, shorter on the elytra; cinereous in color. Pubescence longer beneath.

Head slightly transverse, a little wider than the pronotal apex, muzzle short; front broadly impressed and with a slight convexity against the middle of the clypeal base; punctures rather large, shallow and separated. Eyes large and convex. Antennæ rather elongate, feebly incrassate; joints two to eight rather elongate and slightly compressed; second

oval; third subcylindrically obconical; fourth subtriangular; fifth more broadly triangular and distinctly longer than wide; sixth to eighth about as wide as long and subequal in size; ninth and tenth slightly more robust, scarcely longer than wide; eleventh pointed oval and about a half longer than wide. Pronotum slightly transverse; apex truncate in feeble circular arc; base broadly arcuate, feebly and briefly sinuate laterally within the angles; apical angles rounded, the basal small like a serrule; sides rather evenly arcuate, very feebly convergent anteriorly; serrulations subacute and well defined; disk moderately convex from side to side, punctures rather large, well defined and separated by a distance equal to their diameter, intervening surface flat in the central area and with few scattered punctules, becoming reticulo-indentate laterally.

Elytra oblong-oval, base emarginate and adapted to the pronotal arcuation; disk moderately convex; punctures moderately small, becoming more widely separated and smaller apically, where the surface is smooth and not ruguloso-punctate as toward base. Abdomen finely punctate. Legs moderately stout.

Male. Parallel; posterior femora distinctly arcuate and rather tumid; fifth ventral segment modified, in the central area, and there clothed with black hairs as well as on the genital segments, apex sinuato-truncate, adjacent surface asperate. Female. Broader, sides more arcuate; posterior femora straight and not tumid; fifth ventral moderately broadly rounded at apex, somewhat deflexed; surface just before apex along margin black and asperate.

Length (types) 3.5-3.9 mm.; width 1-1.3 mm.

Type, male, No. 1588, and allotype, female, No. 1589, Museum California Academy of Sciences, collected July 12, 1919, by Mr. Charles L. Fox, after whom the species is named. Paratypes in the collection of the author and that of Mr. Charles Liebeck of Philadelphia.

Type locality, Longmire Springs, Washington.

Foxi resembles *maculosus* Casey, but differs from that species by the modified fifth ventral in the male. It should follow *canescens* in the author's table.

***Listrus anacapis* Blaisdell, new species**

Form elongate oval, moderately convex. Color black, superior surface with a distinct æneous luster. Antennæ piceous, more or less rufous in basal portion; legs piceous, tibiae sometimes rufo-piceous. Pubescence conspicuous, abundant, not completely hiding the general surface, recumbent, somewhat short and plumbeo-cinereous in color; distinctly hair-like on head and pronotum, coarser on the elytra. Elytral maculation not sharply defined, somewhat obscure; a small humeral and a larger parascutellar macule at base on each elytron; post-basal fascia, narrow and zigzag; post-median fascia wider and similar; subapical fascia and macules more or less indefinite; pronotal median vitta almost obscurely divided into four macules, the anterior being smaller; lateral vittæ more or less discernable as two spots each; central area of the head darker. Lateral pronotal fimbriæ rather short, those of the elytra still shorter, not longer anteriorly. Hairs of the abdomen finer than on the superior surface.

Head slightly wider than long, subtriangular, muzzle short. Front plane or very feebly and broadly impressed, not densely punctate; punctures rather small, well defined and separated by a distance equal to one or two times their diameter, denser on the vertex. Eyes moderately large and evenly convex. Antennæ extending to about the basal fourth of the pronotum, subclavate, moderately slender basally; second joint oval, scarcely longer than wide; third subcylindrically obconical, about twice as long as wide; fourth a little broader at apex and about equal to the third in length; fifth a little broader than the contiguous joints, subtriangular and a little longer than wide; sixth, seventh and eighth about as long as wide at apex, shorter than the preceding joints; ninth, tenth and eleventh larger and more robust, similar in form to the eighth; eleventh short obovate and obtusely pointed at apex.

Pronotum slightly different in proportions in the sexes; apex and base arcuate; widest at basal third; angles broadly rounded; sides moderately arcuate in basal half, less so anteriorly, serrulations quite feeble; disk rather strongly and evenly convex from side to side, quite densely punctate; punctures moderately small, distinct and in the central area separated by a distance equal to their diameter, becoming denser, and reticulato-punctate in lateral third; interstices in the central area flat and apparently not indented. Elytra oblong oval, base subtruncate; scutellum quadrate; humeri not prominent or tumid, moderately narrowly rounded; apex rather parabolically rounded; surface vaguely subrugose; punctures larger than on the pronotum and somewhat impressed, separated by a distance equal to two or three times their diameter. Abdomen finely and rather densely punctate. Legs somewhat long, metafemora not noticeably swollen and nearly straight; tarsi slender and elongate.

Male. Narrower, parallel, sides feebly arcuate; pronotum a little longer than wide, sides noticeably straight and convergent in apical half; fifth ventral abdominal segment truncate at apex. Female. Broader, widest behind the middle, sides moderately arcuate; pronotum about as wide as long, less convergent anteriorly, sides more arcuate; fifth ventral segment longer and rounded at apex.

Length (types) 2.6-3.1 mm.; width .9-1.1 mm.

Type, male, No. 1590, and allotype, female, No. 1591, in the Museum of California Academy of Sciences. Paratypes in the collection of the Academy and that of the author.

Type locality, Anacapa Island, California. Collected on May 15, 1919, by E. P. Van Duzee. A small series studied.

Anacapensis is most closely related to *variegatus* Casey, from which it differs in its more elongate form and less developed maculation. Both sexes are more noticeably narrowed anteriorly. In a female *variegatus* kindly identified for me by Colonel Casey, the pronotal punctuation in the central area is sparser, the lateral pronotal and elytral fimbriæ are quite equal in length, the scutellum is wider than long, the male is stouter and the head and pronotum relatively broader as compared to the elytra. The pubescence and maculation resembles some of the extreme forms of *confusus* Casey.

CHARACTERS OF TWO NORTH AMERICAN
CHERMIDÆ*

BY E. P. VAN DUZEE

*California Academy of Sciences, San Francisco***Kuwayama lavateræ** Van Duzee, new species

Aspect of *Trioza nigrella* Crawf. but readily distinguished by its having the frontal cones reduced to pale tubercles; males largely black, females pale; first tergal segment with a white apical margin, usually conspicuous. Length 3.4-3.5 mm.

Head obviously narrower than mesothorax; vertex flat, median impressed line and basal fovea either side distinct; margins tumidly elevated; apical emargination very feeble; frontal cones reduced to a pale tumid lobe at base of antennæ; clypeus prominent, rounded-conical; antennæ longer than width of thorax; præscutum prominently narrowed and subtubercular before, about as in *nigrella*. Fore wings rounded-angular at apex, rather more angled in female. Male forceps slender, acute and incurved at tip and approximate under apex of anal valve, the latter abruptly contracted below at base, then slightly narrowed to apex, taken together longer than wide, when seen from above. Female segment very short, not attaining apex of anal valve.

Color: Male mostly black; edge of vertex, antennæ, frontal cones, clypeus, lateral tubercle of pronotum, some marks at base of wings, hind margin of tergal segments one and six and legs, whitish; apical segment of antennæ, tips of four preceding and base of first, and the hind femora, except apex, black; anterior and intermediate femora with a brown cloud above; tarsal claws black; wings clear, veins pale, the marginal scarcely darker. Sometimes the mesonotum shows four longitudinal vittæ and there may be one on the præscutum. Female paler, yellowish fulvous to brown, more or less varied with darker; antennæ as in male; oviduct black.

Described from numerous examples taken with the young on leaves of *Lavatera assurgentiflora* in San Francisco, November 28, 1918. It is common on this shrubby mallow and often disfigures the plants by causing the leaves to curl. The extent of the markings in both male and female is subject to much variation. It is nearest to *Kuwayama dorsalis* Crawf. but distinct in several characters.

Holotype, male, No. 1592, and allotype, female, No. 1593, Museum of the California Academy of Sciences.

Type locality, San Francisco, California.

Aphalara martini Van Duzee, new species

Allied to *pulchella* Crawf, but smaller and darker with more uniformly dotted wings and different genital characters. Length 2.5 mm.

*Contributions from the California Academy of Sciences, No. 233.

Head nearly as wide as mesonotum; vertex less produced either side the frontal ocellus, the surface elevated either side the incised median line; clypeus more prominently conical; præscutum shorter and more broadly rounded behind; elytra narrower; cubitus more gradually bent to costa leaving the inner apical cell narrower and more pointed at apex; outer apical cell narrower. Genital segment of female short, shorter than the apical two ventral segments together. Forceps of male clavate with an incurved apical tooth; ventral member of anal valve slender, enclosing the forceps; viewed below with a blunt tooth at about their middle; dorsal member erect, short, stout.

Color of male brown varied with lighter, the light marks including a median area on vertex, six spots on pronotum, a median spot on præscutum and about six vittæ on mesonotum; metasternal tubercles and usually the hind edge of ventral segments pale; antennæ pale, black at apex; knees and most of tibiæ and tarsi pale; elytra whitish opaque, veins yellowish, surface rather sparsely but almost uniformly dotted with fuscous; apical veins more or less conspicuously bordered with fuscous; usually with a distinct fuscous cloud on Cu^2 and at apex of Rs (teste Crawford fig. 395, 1914) but these do not join to form a transverse vitta as in *pulchella*. Female similarly marked but the colors paler in all parts; the genital pieces black as are the male forceps.

Described from numerous specimens taken by Mr. J. O. Martin and myself, in great numbers on *Frankenia grandifolia* on the salt-marshes near the mouth of the San Joaquin River at Pittsburg, California, November 25, 1923. I take pleasure in naming this species for one of our local coleopterists who has discovered a number of new and interesting Hemiptera while collecting beetles, and who first brought this species to my attention. At Lake Elsinore, in April, 1920, I took an *Aphalara* that seems to differ from this only in being pale throughout, and may prove to be the summer form of this species. In Crawford's key of 1914 the present species runs to *pulchella* from which the smaller size, short female genital segment, different wing picture and other characters mentioned will separate it.

Holotype, male, No. 1594, and allotype, female, No. 1595, Museum of the California Academy of Sciences.

Type locality, Pittsburg, California.

THE NYMPHS OF TWO SPECIES OF CHERMIDÆ
(HEMIPTERA)

BY G. F. FERRIS

Stanford University, California

On a preceding page of this journal Mr. E. P. Van Duzee has described the adults of two species of Chermids. Through the kindness of Mr. Van Duzee I have been enabled to examine nymphs of these two species and their descriptions are herewith presented. This paper is in effect one of a series in which it is proposed to deal with the immature stages of this family. An explanation of the point of view and of the methods involved in these papers will be found in another of the series¹.

The almost total absence of detailed studies on the immature stages in this family is responsible for the fact that certain structures which occur in some of the members of the family and which appear to be peculiar to them have no name. It is no part of my desire to multiply terms unnecessarily, but in the case of certain of these structures an ordinary descriptive phrase is entirely too clumsy.

There are present on the nymphs of many of the species in the Triozinæ certain seta-like structures which are of peculiar character. Morphologically they are apparently setæ as they arise from a socket but they are distinguished by the fact that at some distance from the base they decrease sharply in diameter, this constriction giving them a jointed appearance. They are associated with the production of wax and upon them as a support, if not from them as a point of origin, rise the slender filaments of wax that are a more or less distinctive feature in the nymphs of this subfamily. To these structures I am applying the term *sectaseta*. I know of no other group in which structures exactly equivalent to these occur.

KUWAYAMA LAVATERÆ Van Duzee

Fig. 1.

Specimens examined: Nymphs of all stages from *Lavatera assurgentiflora*, near Golden Gate Park, San Francisco, California, November 26, 1923 (E. P. Van Duzee).

Nymphal stages: The material at hand contains specimens clearly representing five stages. As this agrees with the number known in other species of the family it may be assumed that these are all.

¹ Ferris, G. F. Observations on the Chermidæ, Part I. Canadian Entomologist, 55:250, 1923.

Fifth stage: Length 1.8 mm. Form regularly oval, the head, however, across its posterior portion and the abdomen at the base narrower than the wing pads, so that the continuity of margin is interrupted at these points. Wing pads produced cephalad nearly to the anterior margin of the eyes. Dorsum quite heavily chitinized, the abdomen composed for the most part of a single plate, with a narrow, medially interrupted, plate at the joint between abdomen and thorax. Entire margin of the body, except for the eyes, beset with a continuous series of sectasetæ, these (Fig. 1B) quite slender and borne upon distinct prominences; dorsum likewise thickly beset with sectasetæ, those on the abdomen arranged in segmental series. Derm over the entire dorsum also thickly beset with minute points (Fig. 1B) except for a series of small areas on the abdomen where these give way to peculiar, minute, fringed processes (Fig. 1D).

Ventral side membranous throughout except for a faintly chitinized marginal zone, the anal area, a small area about each spiracle except the first pair and faint submedian areas; the derm of the abdomen beset, like the dorsum, with minute points. Antennæ (Fig. 1C) four-segmented, the first two segments very short, the other two quite long and each bearing two small sensoria. Legs without trochanter; with the division between tibia and tarsus distinct; claws present, the pulvillus quite large and triangular (Fig. 1E). Anal opening set well in from the apex of the body, the outer circum-anal pore ring consisting of a single row of slit-like pores, the inner ring consisting of an irregular row of small circular pores (Fig. 1H).

Fourth stage: Length 1.1 mm. In general characters practically identical with the fifth; differing in having the antennæ (Fig. 1E) but three-segmented, the third segment very large, and with three small sensoria, and in lacking the division between tibia and tarsus. There is a slight reduction in the number of sectasetæ.

Third stage: Length .7 mm. Like the fourth stage but with only two sensoria on the third segment of the antennæ. The sectasetæ fewer and proportionately much larger as they remain nearly of the same size as in the fifth stage.

Second stage: Length .45 mm. Antennæ but two-segmented (Fig. 1G), the first segment very short, the second relatively very large and bearing a single sensorium. Sectasetæ still fewer, those on the abdomen arranged for the most part in distinct longitudinal rows.

First stage: Length .3 mm. Antennæ as in the second stage but with the first segment very small and obscure. Rudiments of the wing pads represented each by a chitinous plate, these plates meeting at the meson, but not extending beyond the margins. Dorsum of the abdomen differing markedly from the other stages, the segments sharply divided from each other. Sectasetæ very much reduced in number, there being but one at the lateral margin of each segment, except the last, and four in a row across the segment.

APHALARA MARTINI Van Duzee

Fig. 2.

Specimens examined: From *Frankenia grandifolia*, Long Beach, July 20, 1923 (E. Bethel), and the same host, Pittsburg, California, December 1, 1923 (E. P. Van Duzee). Nymphs of all but the first stage present.

Nymphal stages. Fifth stage (Fig. 2*A*): Length 1.3 mm. Elongate; the wing pads projecting from the side of the body but not produced cephalad; eyes rather prominent and extending beyond the contour of the head. All setæ of the dorsal side and the margins short, stout and somewhat lanceolate (Fig. 2*C*).

Antennæ borne at the margin of the head, three-segmented, the first two segments quite short, together scarcely more than a third as long as the third segment, all the segments with a few lanceolate setæ and devoid of sensoria.

Dorsum with the derm for the most part chitinous, the chitinization broken up into numerous plates which are arranged as follows: head with a pair of large plates and each segment of thorax with a pair of large and several smaller plates, the large plates of both head and thorax separated mesally and bearing a row of lanceolate setæ along the mesal margin. Wing pads with a marginal row of lanceolate setæ and a few such setæ over the surface. Abdomen with a pair of mesally separated, narrow plates on each of the first four segments and with the remainder of the surface, consisting apparently of four segments, composed of a pair of mesally separated plates which show some traces of segmentation; all of the plates with lanceolate setæ along the mesal margin, a few over the surface and at the lateral margin. Derm (Fig. 2*B*) somewhat vermiculate.

Ventral side membranous throughout except for a small plate at the base of each antennæ, one at the eye, an irregular apical area and a small plate about each spiracle. All of these chitinized areas are beset with fine points (Fig. 2*F*). Legs without trochanter; with the division between tibia and tarsus distinct; pulvillus a sub-circular pad (Fig. 2*E*). Anal opening set well in from the apex of the body, the outer circum-anal pore ring consisting of a single row of slit-like pores (Fig. 2*G*), the inner ring consisting of an irregular row of small, circular pores.

Fourth: Length .7 mm. What appears to be the fourth stage differs from the fifth chiefly in the smaller size, in the presence of but two segments in the antennæ (Fig. 2*D*) and the absence of a tibio-tarsal joint.

Third stage: Length .7 mm. Apparently differing from the fourth only in size.

Second stage: Length .5 mm. Apparently differing from the third only in size and in the smaller wing pads.

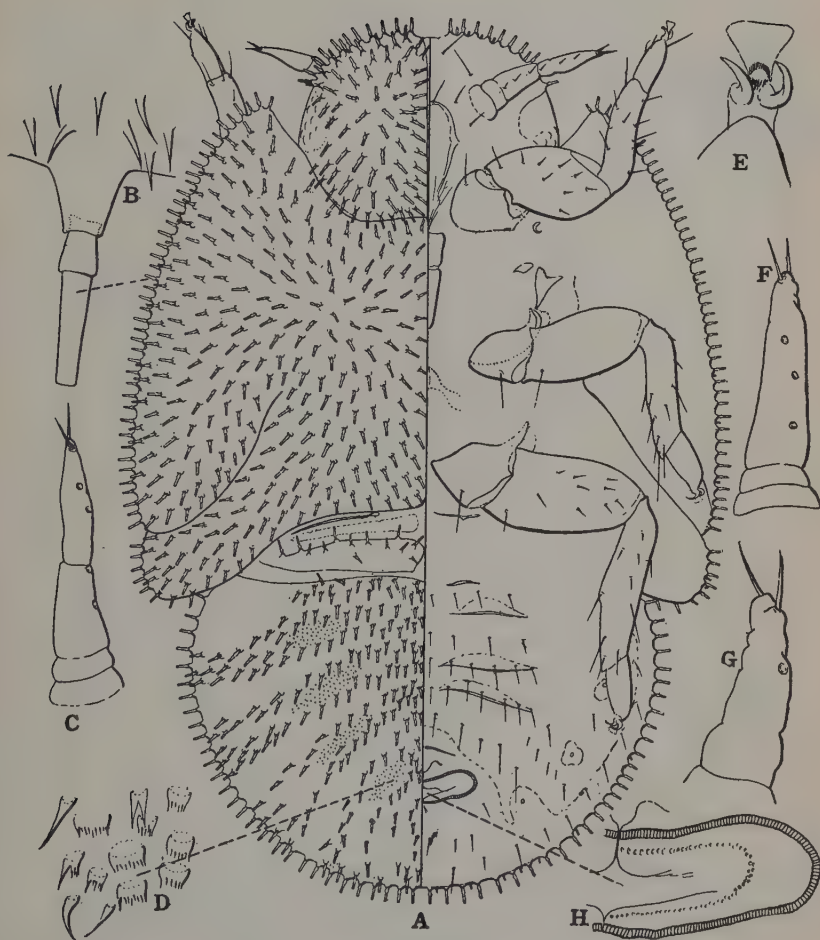


Fig. 1. *Kuwayama lavateræ* Van Duzee: A, nymph of fifth stage; B, sectaseta and portion of derm; C, antenna of fifth stage; D, ornamentation of portion of derm; E, apex of tarsus; F, antenna of fourth stage; G, antenna of second stage; H, anal area.

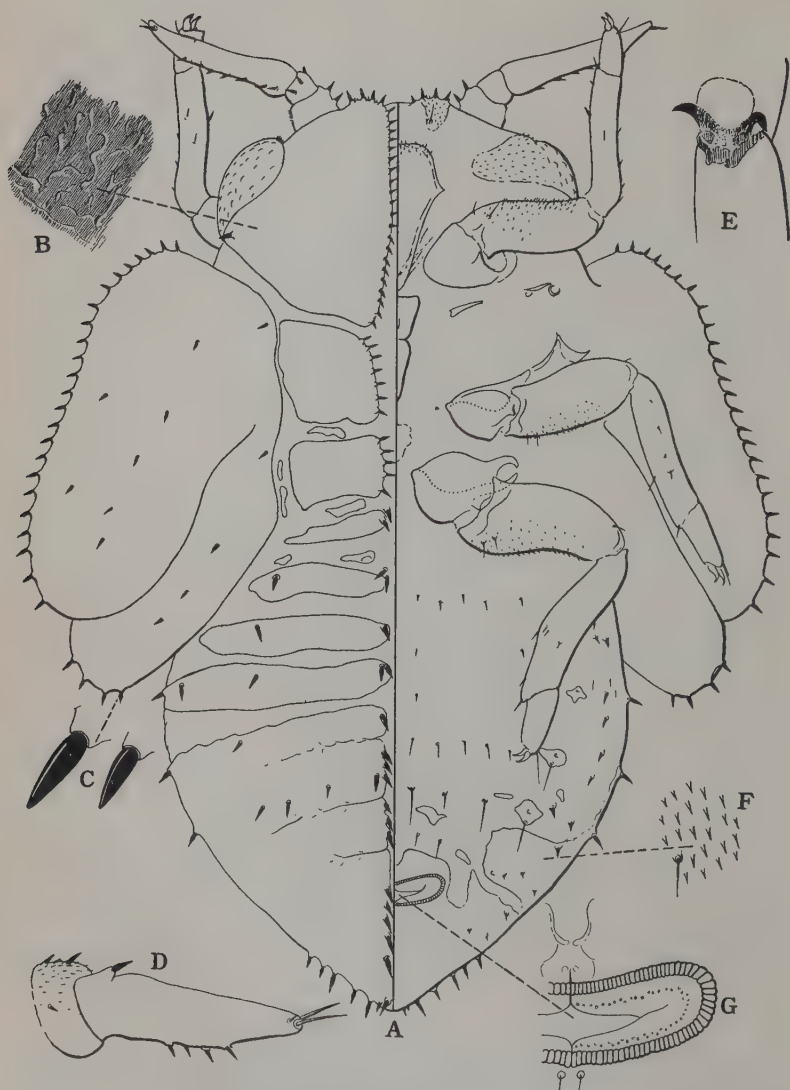


Fig. 2. *Aphalara martini* Van Duzee: A, nymph of fifth stage; B, ornamentation of derm of dorsum; C, marginal setae; D, antenna of fourth stage; E, apex of tarsus; F, ornamentation of venter; G, anal area.

NEW CALIFORNIA SPIDERS

BY J. H. EMERTON

Boston, Mass.

In June, 1905, in company with Mr. and Mrs. G. W. Peckham, the writer spent a week at Berkeley, California, collecting spiders, some of which have remained to this time undescribed. The recent collections of Mr. and Mrs. Van Duzee have revived interest in California spiders. Three apparently new species are here described. One of these, *Theridion punctipes*, belongs to the subgenus *Phyllonethis* and occurs in company with *Theridion placens* Keyserling and *Theridion californicum* Banks, both of which are described for comparison. All three spiders live among the leaves of plants. The other two new species resemble *T. murarium* of the Eastern United States and were mistaken for it at the time of collection, both living on walls and fences and in the stone work outside of houses. The types of the new species are in the author's collection.

1. *Theridion punctipes* Emerton, new species

About 4 mm. long and with a general pale yellow color. The cephalothorax is grayish with an indistinct darker middle stripe. The abdomen has a pale middle stripe and grayish sides, with irregular markings in pairs mixed with fine black spots (Fig. 1). On the under side are grayish markings which obscure the epigynum, which is not as dark in color or as distinct as in the related species. The legs are banded lightly with gray at the ends and middle of the joints and marked with fine dark spots, most numerous on the femora and on the first and second legs. The mandibles are long in both sexes and in the male are as long as the cephalothorax (Fig. 2). The male palpi have the tibia longer than the tarus. The palpal organ is narrower toward the end and has the process on the under side smaller than in the related species (Fig. 3).

2. *THERIDION PLACENS* Keyserling

Four or five millimeters long and generally pale yellow. The under side is pale with the epigynum showing distinctly as a small black spot. The cephalothorax has a gray middle stripe. The abdomen has a pale middle stripe with gray markings at the sides, but these markings are most distinct on the hinder half and are often wanting entirely in front. The legs are pale, with hardly any gray at the ends of the joints. The male palpus has the tibia short. The palpal organ is narrowed toward the end and the inner process is large and blunt (Fig. 4).

3. *THERIDION CALIFORNICUM* Banks

Generally pale yellow and somewhat smaller than *placens* and *punctipes*. The abdomen is pale beneath, with the epigynum dark, and surrounded by a larger dark area. The dorsal colors are more variable than in the related species. The cephalothorax has a gray middle stripe, usually pale and often absent. The abdomen is usually pale with a middle stripe toward the posterior end and two translucent brownish lines. In some individuals there are black spots in pairs along the middle stripe and a black middle stripe with or without opaque white spots (Fig. 6). The male palpus has the tibia short. The palpal organ is blunt at the end and the inner process is long and sharp, resembling that of *T. frondeum* of the eastern coast (Fig. 5).

4. *Theridion stanfordi* Emerton, new species

Female 3 mm. long, male 2 mm. Cephalothorax gray without middle or lateral stripes. Abdomen spherical, gray with a distinct middle stripe the whole length, lighter in the middle and with darker edges. The sides have oblique rows of spots varying in distinctness in different individuals. The under side of the abdomen has a light spot in the middle surrounded by a dark area connected with the lateral markings. The general appearance is much like *T. murarium*. The epigynum has a wide opening half oval in shape (Fig. 9). The palpal organ has the tube flat against the under side, supported at the end by a small process (Fig. 7). The only male is much smaller than the females.

Found in carved stone outside buildings of Stanford University, and outside houses in Berkeley.

5. *Theridion berkeleyi* Emerton, new species

Male 3 mm. long. Color generally gray. Cephalothorax pale with dark middle and narrow side stripes. Abdomen with a light middle stripe and dark gray sides. The legs are dark at the end and middle of each joint. The male palpus (Fig. 8) resembles closely that of *T. murarium*, the tube has the same shape as in the latter species, but the supporting process at the end is longer and more slender. The hook on the inner side is much stouter than in *murarium* and slightly serrated.

Only one male was found, on the outside of a house at Berkeley.

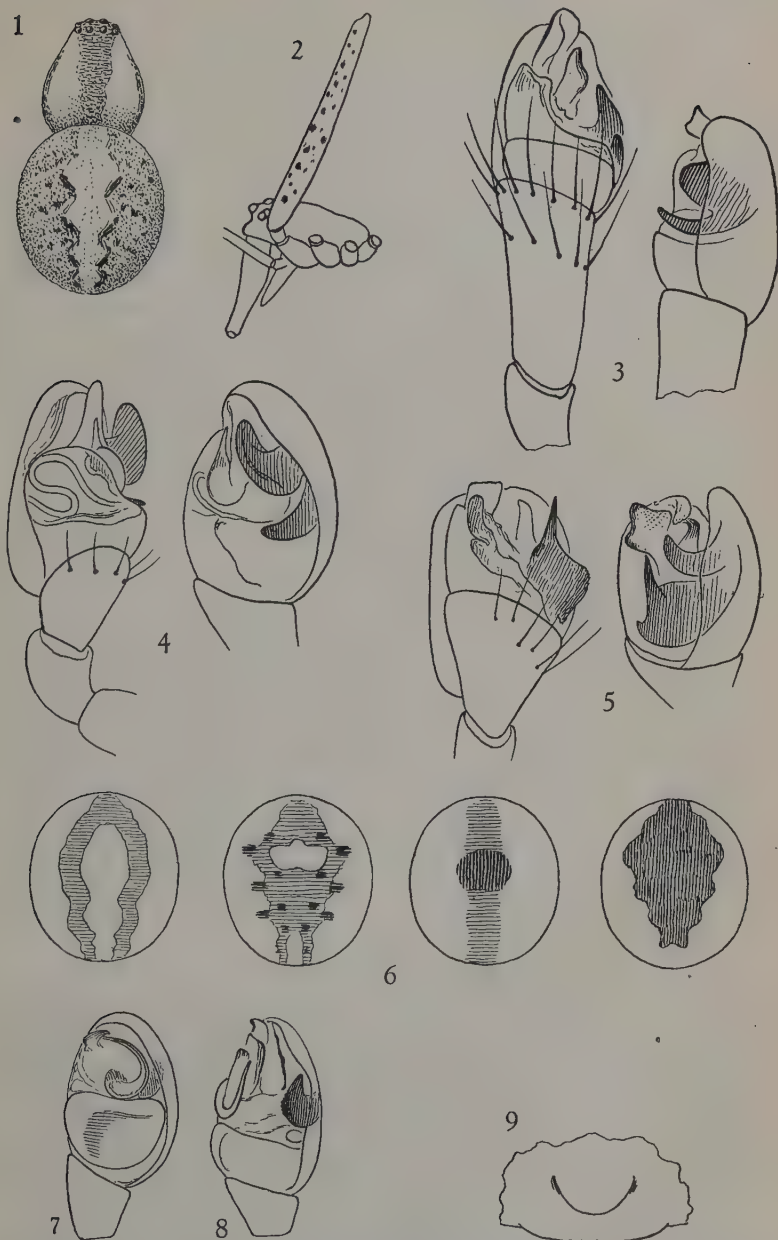


Fig. 1, Dorsal markings of *T. punctipes*. Fig. 2, Cephalothorax, mandibles and first femur of *T. punctipes*. Fig. 3, Male palpus of *T. punctipes*. Fig. 4, Male palpus of *T. placens*. Fig. 5, Male palpus of *T. californicum*. Fig. 6, Variations of dorsal markings of *T. californicum*. Fig. 7, Male palpus of *T. stanfordi*. Fig. 8, Male palpus of *T. berkeleyi*. Fig. 9, Epigynum of *T. stanfordi*.

THE CHEIRIDIINÆ OF NORTH AMERICA
(Arachnida-Pseudoscorpionida)

BY JOSEPH CONRAD CHAMBERLIN

Stanford University, California

It is of more than ordinary interest to be able to report the presence of this subfamily in North America. Two western American species have been discovered and are here named. *Cheiridium museorum* Leach, a domestic species which has been widely dispersed by commerce, is briefly included inasmuch as it will also surely, sooner or later, become a member of our fauna. Since no adequate definition of the sub-family is readily available in the literature an attempt is made to give one here.

Measurements are taken as described by Chamberlin (1923, Proc. Cal. Acad. Sci. XII: 356-357: f.) with the following changes. The length of the hand is omitted and the breadth of the base of the movable finger of the claw is added. Four coxal measurements of each of the coxæ of the palpus, leg I and leg IV are added. These are: greatest length, greatest breadth, accessory length and accessory breadth, and they are taken as indicated in Fig. A. Total length is of cleared, stained (expanded) specimens, and is exclusive of the chelicerae. Three carapacial measurements are here given, these are, median length, anterior breadth (across the eyes) and the posterior breadth, all tabulated in the order given. The cucullus length is from the anterior margin of carapace to a line drawn between the centers of the two eyes. For the chelicerae in this same order are given the length and breadth of the basal finger or segment, and the length of the movable finger.

All measurements are in terms of the length of the femur of the palpus. K is simply the length of the femur of the particular specimen measured, in millimeters. K times any measurement will give that measurement in millimeters. The "JC" numbers are my personal catalogue numbers of the specimens under consideration. All are in my personal collection including types. Male and female paratypes of *Apocheiridium ferumoides* are deposited in the California Academy of Sciences; Department of Entomology at Stanford; Museum of Comparative Zoology and the British Museum of Natural History. Mr. E. O. Essig of the University of California is the original discoverer of this species.

CHEIRIDIINÆ Hansen

1894, Hansen, Ent. Med. udg. For. Copenhagen. IV:232.

Diagnosis: All tarsi single segmented, I & II sub-equal in length to tibiæ, III & IV shorter than tibiæ; all femora undivided (I & II may show a vestigial articulation trace); claws simple; empodia undivided and sub-equal to claws; sternum absent; carapace posteriorly broader than long, sub-equilaterally triangular; eyes two, cucullus well developed; typically with a single broad carapacial furrow; abdomen broadly ovate, broadest medially; anus entirely ventral, borne on shield composed of fused 11th tergite and last sternite; tergites and sternites longitudinally divided; no tarsal nor abdominal pseudotactile setæ; stigmatic helix present but obscure; spiracular guard sclerite reduced to a chitinous border line; maxilla slightly or not at all overlaid by coxa I; lamina maxillaris well developed, non-serrately margined; median and posterior maxillary lyrifissures complete ovate loops; maxillary trochanteral foramen situated laterally, invisible from ventral aspect; palpal poison ducts absent; chelicerae small, all but base of hand visible from above; coxal area roughly triangular, narrowing anteriorly; typically extremely and rugosely granulate on palpi and to a lesser degree on carapace and abdomen; palpal and dorsal setæ typically strongly curved, usually with a single dorsal tooth; small, much depressed, slowly moving forms, less than 2.0 mm. long.

Remarks. In addition to the above characters the American and European species are characterized by chelicerae bearing a small lamina interior; a laminiform serrula interior with an apical tooth and one or two scarcely dentate lobes; an eight or ten toothed serrula exterior attached throughout its length; by the presence of the terminal galeal seta, and the exterior, interior, basal and sub-basal setæ, the laminal seta being absent. One dorsal and one ventral cheliceral lyrifissure present. The tergal border setæ in both Cheiridium and Apocheiridium number between 22 and 28 per tergite; marginal lyrifissures number about 6 per tergite. Sub-terminal tooth of movable finger of chelicera vestigial.

As the result of investigations, as yet unpublished, it has been discovered that the tactile setæ of the claws typically number twelve throughout the order, but that occasionally in some groups, some of these are lost. It is also possible to more or less safely homologize these setæ. Typically there are four such setæ on the movable finger; four on the exterior surface of the fixed finger and four on its interior surface. These setæ I have named as indicated in Figs. J and U. Apparently the interior terminal seta of the fixed finger and the terminal and basal setæ of the movable finger are typically, if not always, absent in this subfamily. Some others may be present or absent.

The male genitalia presents a number of curious features. Of particular interest is the presence of typical genital sacs

(Fig. R) very similar to those that occur in most of the Obisiidæ and Garypinus, as well as in other groups. The rams-horn organs of the genus *Chelifer* are probably homologous with these sacs, merely being specialized for a particular function. In this particular group they are destroyed by boiling in KOH as is ordinarily done in making preparations and they are only observable in "uncooked," but cleared specimens. Likewise the curious grape-like clusters attached to the genitalia are of considerable interest (Fig. R). They appear to be homologous with the typical unimpaired median testis. They are probably characteristic of the subfamily at least.

All the species I have studied fall into two well marked genera. They may be separated by aid of the key.

Femoral angle pronounced; movable finger of claw with but a single tactile seta; 11 tergites visible from above.....*Apocheiridium* genus nov.
Femoral angle non-existent; movable finger of claw with two tactile setæ; 10 tergites only visible from above.....*Cheiridium* Menge.

***Apocheiridium* Chamberlin, new genus**

Orthotype, *Apocheiridium ferumoides* sp. nov. North America: California.

Diagnosis: Terminal, sub-basal and basal setæ of movable finger absent; tactile setæ spaced as in Fig J; claw more or less turbinate; femoral angles pronounced; humeral angles obsolete; internal lateral chitin fold of coxa I pronounced; 11 segments visible from above; tergites 1 to 9, inclusive, longitudinally divided; anterior blade of flagellum broad as posterior two combined and at least slightly dentate anteriorly; posterior margin of trochanter evenly rounded; female with a row of three separate and distinct simple galeæ on each chelicera; male with two (or one) stylet-like galeæ similarly arranged; first four tergites distinctly narrowed, third narrowest, little more than half width of broadest ones.

Distribution. France, Italy, Sardinia, South Africa, Western United States, Western Mexico.

Remarks. The four species known to belong to this genus may be separated by means of the following key. All are superficially very similar and careful examination is necessary to distinguish them.

- 1, Claw 5.5 times as long as width of tibia; femur about 4.3 times as long as greatest breadth; from Idaho, Utah.....*mormon* sp. nov.
- , Claw 4.6 or less times as long as width of tibia; femur less than 3.9 times as long as greatest breadth.....2.
- 2, Tibia 2 times or less longer than breadth of claw; genital loops of male distinctly longer (without pedicel) than lateral diameter of x-sac; California.....*ferumoides* sp. nov.
- , Tibia 2.3 or more times as long as breadth of claw; genital loops of male much shorter than lateral diameter of x-sac; old world species 3.

- 3, Small species, less than 1 mm. long; granulations of femur much reduced, no, or very few, large, tooth-like granules; tibia at least 2.5 times as long as width of trochanter; South Africa.....

.....*Apocheiridium* (un-named) sp. nov.

- , Larger species, distinctly more than 1 mm. long; granulations of femur pronounced, numerous very large tooth-like granules; tibia less than 2.4 times as long as width of trochanter; Europe.....

.....*ferum* (Simon)

***Apocheiridium ferumoides* Chamberlin, new species**

(Fig. B-F, H, K-P, R-S, V, X-Y, AA)

Types. Holotype ♂, JC, 194.01007; allotype ♀, JC, 194.01008. Stanford University, California. Under bark of *Eucalyptus globulus*.

Other material. Type collection of 260 specimens, Stanford University, California. Under bark of *Eucalyptus globulus*. In addition to this collection I have at hand specimens from the following localities. California: Berkeley, University of California campus, under bark of *Eucalyptus*; Atherton, San Mateo County, from under bark of log of *Cupressus macrocarpa* and stump of *Pinus radiata*; Jasper Ridge, San Mateo County, under bark of dead white oak; La Honda, San Mateo County, under bark of *Sequoia sempervirens*; Big Basin, Santa Cruz County, under bark of *Sequoia sempervirens*. In last two collections only shed skins are included, taken from the abundant moulting nests present. These nests are often excessively abundant under bark slabs; they are pure white, flat, circular silken capsules about 2.3 mm. in diameter. Mexico: a single immature specimen (JC-179.01005) belonging certainly to this genus and possibly to this species was presumably taken under the bark of a mesquite tree at Mulegé, Lower California, in company with *Garypinus corticolus* J. C. Chamb. It is not entirely impossible that the presence of this specimen in the vial of Mexican material was fortuitous but this appears to be rather doubtful and I am inclined to believe the record valid. The galea which is entirely typical is shown in Fig. G.

Diagnosis. Male: Palpi stout (Fig. AA); claw strongly turbinate; tibia relatively short, measuring about 0.8 as long as femur; carapacial furrow comparatively deep; trochanter, anterior margin of femur, femoral angle and to a slight degree the anterior margin of the tibia, with numerous large tooth-like tubercles; carapace and tergites with typical pseudoscales modified into striking stellate rugosities (Fig. X); sub-basal seta of chelicera distinctly toothed (Fig. D); galea of two stylets, one small, well developed, typically simple, the other much smaller, vestigial (Fig. H); genitalia distinctive (Fig. L & M); genital loops with long pedicels, elbowed near their point of union with the paired anterior apodeme; genital loop distinctly longer than lateral diameter of the more or less flattened elliptical x-sac; median loop

strongly acute, V-shaped; 9 grape-like testicular clusters (Fig R); genital sacs large beyond genital loops; attachments not made out.

Measurements: JC-196.01001. Total length, 1.38 mm. K, 0.383 mm. Carapace (1.14-0.71, 1.35). Cheliceræ (0.27-0.13, 0.2). Palpus (0.6-0.33, 0.51-0.45) (0.47-0.33) (1.0-0.27) (0.82-0.27) (1.24-0.39) (0.64-0.14). Leg I (0.24-0.41, 0.42-0.47) (0.21-0.17) (0.49-0.18) (0.33-0.12) (0.32-0.09). Leg IV (0.14-0.52, 0.64-0.62) (0.27-0.18) (0.73-0.15) (0.48-0.14) (0.43-0.09). Cucullus, 0.22. Abdomen breadth, 2.06.

Female: Essentially as in male; central cribriform plate lightly chitinized, with few pores; lateral plates of characteristic irregular shape (Fig. N), pores apparently very minute; chaetotaxy as indicated.

Measurements: JC-195.01001. Total length, 1.57 mm. K, 0.394 mm. Carapace (1.12-0.65, 1.38). Cheliceræ (0.25-0.12, 0.19). Palpus (0.59-0.34, 0.50-0.44) (0.47-0.32) (1.00-0.26) (0.80-0.27) (1.23-0.40) (0.65-0.15). Leg I (0.27-0.43, 0.41-0.44) (0.20-0.16) (0.48-0.18) (0.32-0.12) (0.31-0.08). Leg IV (0.15-0.53, 0.65-0.62) (0.26-0.15) (0.73-0.18) (0.48-0.12) (0.40-0.09). Cucullus, 0.23. Abdomen breadth, 2.06.

Remarks. It is interesting to note the asymmetrical development of the genital loops in specimen shown in Fig. M. Typically they are as in Fig. R. The lateral cribriform plates of the female are variably placed, depending upon the amount of distortion produced in making the preparation. Most closely related to *A. mormon* sp. nov.

***Apocheiridium mormon* Chamberlin, new species**

(Fig. J, JJ, P-Q, Z)

Material. The holotype, ♂ JC-188.01001. Fish Haven (Bear Lake), Idaho. Coll. J. C. C. Under bark of mountain mahogany (log in woodpile). IX/8/21.

Diagnosis. Male: Palpi slender (Fig. Z); claw turbinate; tibia relatively long, being about 0.86 as long as femur; granulation of palpus less prominent than in *ferumoides*; carapace and tergites with pseudo-scales of a rugosely scaled appearance, not stellately roughened as in *ferumoides*; genitalia differs from that of *ferumoides* in that the x-sac is somewhat more heavily chitinized; the median loop is more heavily chitinized and is anteriorly acutely angled, rather semi-circular in outline; genital loops much as in *ferumoides*, but shorter, and, without the pedicel, sub-equal to the lateral diameter of the x-sac (Fig. Q). (Due to faulty preparation genitalia could not be worked out with the accuracy and completeness possible in *ferumoides*.)

Measurements: Total length, 1.35 mm. K, 0.325 mm. Carapace (1.18-0.68, 1.43). Cheliceræ (0.29-0.15, 0.21). Palpus (0.57-0.39, 0.50-0.43) (0.50-0.32) (1.00-0.23) (0.86-0.24) (1.33-0.36) (0.71-0.14). Leg I (0.21-0.46, 0.45-0.54) (0.21-0.18) (0.54-0.19) (0.36-0.12) (0.37-0.09). Leg IV (0.16-0.59, 0.68-0.70) (0.29-0.18) (0.77-0.18) (0.50-0.12) (0.43-0.10). Cucullus, 0.23. Abdomen breadth, 2.10.

Remarks. Most closely related to *ferumoides* as indicated by genitalia. In some respects this species seems to be intermediate between *ferum* and *ferumoides*, not of course in the sense that it is an intergradation.

APOCHEIRIDIUM FERUM (Simon)

1879, *Cheiridium ferum* Simon. Arach. France. VII:44; Pl. XVII; f. 21.

This species which is native to southern France, Italy and Sardinia differs very distinctly from the American forms in the genitalic structures. The carapacal and tergal reticulations are much as in *mormon*. It is being fully treated in another paper and need not be considered further here. In regard to the reported occurrence of this species in South Africa see below.

Apocheiridium, un-named new species

1912, *Cheiridium ferum* Simon, Ellingsen, Ann. South African Mus. X:86 and 104. (Misdet.)

This species as indicated in the preceding key is not *Cheiridium ferum* as Ellingsen supposed. It is however most closely related to *ferum* with which it agrees in the general type of the genitalic structures and in the tendency toward the obliteration of the carapacal furrow. It differs strikingly in the matter of the scarcity of the large tooth-like granulations so characteristic of the other forms. The characters used in the key will easily separate the two species.

Inasmuch as Mr. John Hewitt of the Albany Museum at Grahamstown is at present working on the Pseudoscorpions of South Africa I am leaving the formal naming of this species to him.

CHEIRIDIUM Menge

1855, *Cheiridium*, Menge, Ueber die Scheerenspinnen, Chernetidæ, 36.

Haplotype, *Chelifer muscorum* Leach. Europe, Cosmopolitan.

Diagnosis: Terminal and basal setæ of movable finger of claw absent; setæ spaced as in Fig. U; claw not turbinate, more or less ovate; femoral angle obsolete; humeral angle prominent; internal chitin fold of coxa I absent; but 10 segments visible from above; tergites 1 to 10, inclusive, divided by a longitudinal suture; movable finger of chelicera bearing a single small unbranched galea (apparently no sexual difference); anterior blade of flagellum as broad as posterior two combined, with its anterior margin perfectly smooth (Fig. I); posterior margin of trochanter distinctly and acutely angled; third tergite distinctly although slightly narrower than others, differentiation not nearly so marked as in *Apocheiridium*.

Definitely known to include but two species, the type and a fossil from the baltic amber, (*Cheiridium hartmanni* Menge). Four other species heretofore included in this genus must ultimately be otherwise disposed of. This is impossible to accomplish in the absence of material and hence they are here left as an appendix to the type genus. They are *Cheiridium tetrophthalmum* Daday (really a Garypoid form); *Cheiridium corticum* Balzan, (possibly belongs to *Apocheiridium* although this seems

doubtful); *Cheiridium subtropicum* Tullgren and *Cheiridium formosanum* Ellingsen, two apparently closely related species, will at least fall into a distinct genus.

According to Menge, and judging from his rather inadequate figures, *Cheiridium hartmanni* is very close to *Cheiridium museorum* but until a careful examination can be made of actual material of this former species no distinguishing line can be drawn between the two, except that *hartmanni* appears to be, in general, smaller.

CHEIRIDIUM MUSEORUM (Leach)

(Figs. A, I, T, U, W, BB)

1817, *Chelifer museorum* (Leach), Zool. Miscell. III:51.

1855, *Cheiridium museorum* (Leach), Menge, Ueber die Scheerenspinnen, Chernetidæ; 36:Pl. V; f. 11.

Material examined. Two males (JC-189) obtained by exchange from Louis Fage of Paris. Labeled simply as from "France."

Diagnosis. Male: Palpi slender, without large tooth-like tubercles (Fig. BB); carapace and tergites strongly tuberculate, of type shown in Fig. W; genitalia distinctive (Fig. T); genital loops much as in *A. ferumoides*; anterior apodemes heavy, anteriorly fused, basally with a prominent irregular perforation; median loop almost obliterated, fused with posterior apodeme which is similarly much contracted.

Measurements: JC, 189.01002. Total length, 1.28 mm.; X, 0.357 mm. Carapace (0.96-0.52, 1.17). Chelicerae (0.29-0.13, 0.20). Palpus (0.52-0.29, 0.45-0.39) (0.39-0.32) (1.00-0.22) (0.80-0.28) (1.30-0.39) (0.69-0.16). Leg I (0.29-0.26, 0.38-0.31) (0.23-0.19) (0.57-0.16) (0.42-0.13) (0.45-0.10). Leg IV (0.13-0.55, 0.62-0.57) (0.37-0.21) (0.84-0.19) (0.60-0.14) (0.59-0.10). Cucullus, 0.23. Abdomen breadth, 1.95.

Remarks. Recorded from all of Europe, South Africa, India, and generally regarded as cosmopolitan.

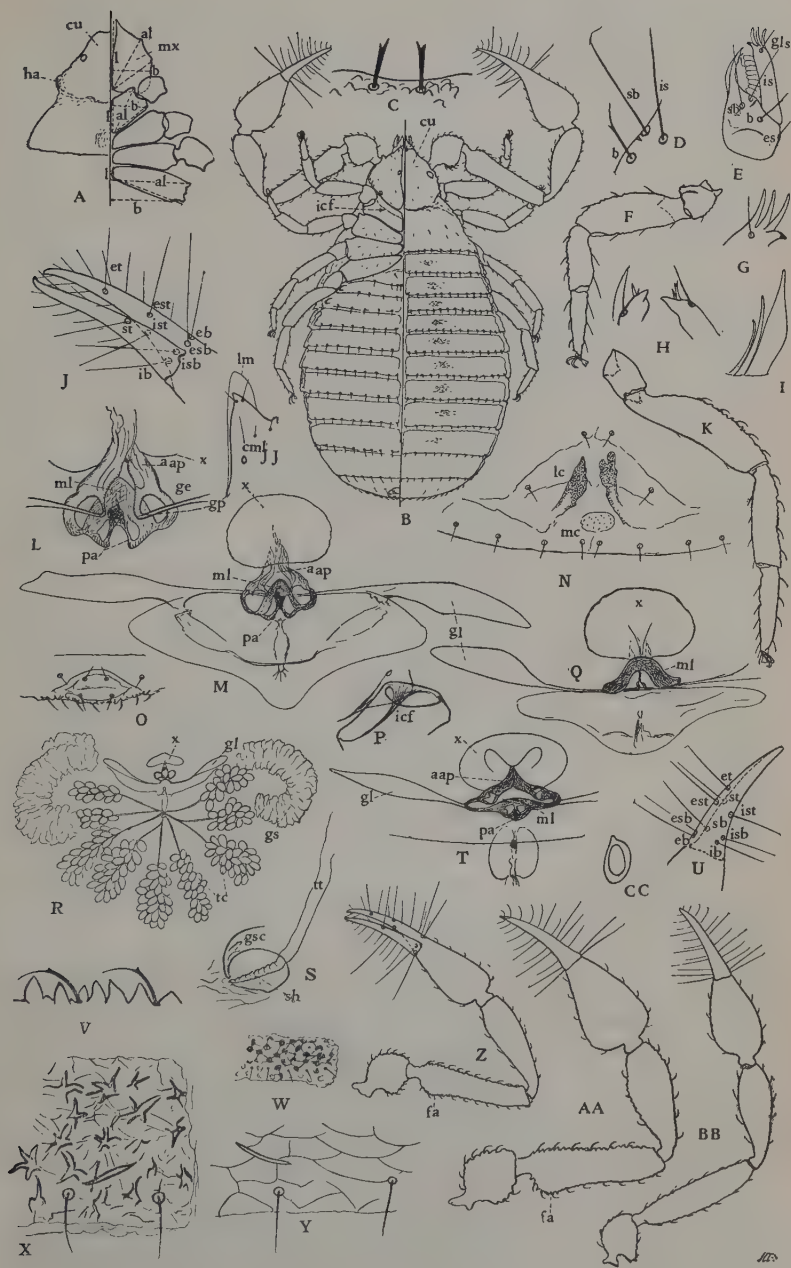
CAPTIONS FOR FIGURES

Cheiridium museorum Leach, ♂, 189.01002.

A, Carapace and coxæ; dotted lines indicate method of taking coxal measurements. I, Flagellum. T, Internal chitinous structures of genitalia. U, Dorsal aspect of left claw, tactile setæ. W, Portion of tergite showing rugosity. BB, Ventral aspect of left palpus.

Apocheiridium ferumoides sp. nov.

B, General aspect; left, ventral—right, dorsal. ♂, 194.01001. C, Margin of cucullus, note toothed setæ. ♂, 194.01001. D, Dorso-lateral aspect of left chelicera showing tactile setæ. 194.0—. E, Dorso-lateral aspect of right chelicera. ♀, 195.01001. F, Leg I: Vestigial articulation (apparent on one side of leg only) indicated by dotted line. ♀, 195.01001. H, Tips of chelicerae showing galeæ. ♂, 194.01001. K, Leg IV: ♀, 195.01001. L, Dorsal aspect of central chitinous structures of male genitalia. ♂, 196.01001. M, Ventral aspect of chitinous structures of male genitalia. ♂, 196.01001. N, Epypgium, chaetotaxy and cribriform plate. ♀, 190.01005. O, Anus, entirely ventral. ♀, 195.01001. R, General aspect of male



genitalia in "uncooked" specimen; note genital sacs and peculiar testicular (?) clusters. ♂, 194.01001. S, Left anterior spiracle. ♂, 194.01001. V, Portion of anterior margin of femur of palpus showing toothed falciform setæ and tooth-like granulations. ♀, 194.01003. X, Portion of tergite showing "reticulations." ♂, 194.01006. Y, Portion of sternite showing "reticulations." ♀, 195.01001. AA, Ventral aspect of left palpus. ♀, 194.0— CC, Median maxillary lyrifissure. ♀, 194.01003.

Apocheiridium sp. (possibly *ferumoides*)

G, Galea. ♂, 179.01005.

Apocheiridium mormon sp. nov. ♂, 188.01001.

J, Ventro-lateral aspect of fingers of claw, tactile setæ. P, Coxa of leg I showing internal lateral chitin fold. Q, Ventral aspect of male genitalia. (Considerably distorted due to faulty preparation; should appear more similar to *ferumoides* except for differences shown in x, ml and gl.) Z, Ventral aspect of left palpus.

Structural abbreviations used

Tactile setæ of claw

t, terminal seta; st, sub-terminal seta; sb, sub-basal seta; b, basal seta.

Without letter prefixed indicates movable finger. With a prefix of "e" indicates exterior setæ of fixed finger; with "i," interior setæ of fixed finger.

Setæ of chelicerae

gls, galeal seta; is, interior seta; bs, basal seta; sbs, sub-basal seta; es, exterior seta.

Coxal measurements (A)

l, length; b, breadth; al, accessory length; undesignated line is for the accessory breadth.

Male genitalia

x, X-sac; gl, genital loop; gs, genital sac; tc, testicular clusters; ge, elbow of genital loop pedicel; gp, genital loop pedicel; aap, paired anterior apodeme; ml, median loop; pa, posterior apodeme.

Epygium

mc, median cribriform plate; lc, lateral cribriform plate.

Miscellaneous

ha, humeral angle; cu, cucullus; mx, maxilla; fa, femoral angle; icf, internal lateral chitin fold of coxa I; cml, median maxillary lyrifissure; ml, lamina maxillaris.

DOLICHOVESPULA DIABOLICA SAUSS. AND ITS SUPPOSED VARIETY FERNALDI LEWIS

(Hymenoptera, Vespidae)

BY CARL D. DUNCAN

Stanford University, California

A study of the 291 specimens comprised in the collection of Stanford University and that of the author, and to which one or the other of the above names may be applied, has led to the conclusion that they represent but one species which should be known as *Dolichovespula diabolica* Sauss., and which is not

divisible even into varieties. The species was described by H. de Saussure in 1853.¹ *D. d. fernaldi* is a synonym pure and simple.

Individuals of this species having a pair of yellow spots on the propodeum, as differing from the typical form in which the propodeum is entirely black, were in 1897 described by H. W. Lewis as a distinct species under the name *Vespa fernaldi*.² Other slight color differences, such as the presence of more yellow on the abdominal segments and on the legs, were taken account of in the description. Lewis based his description on specimens from Colorado.

Subsequent writers, Cockerell³, Viereck⁴, and Buysson⁵, have considered *fernaldi* as merely a variety of *diabolica*. Buysson says, "Semblable au type, dont elle ne differ que par deux taches jaunes sur le segment mediaire ; par la couleur jaune plus abondante sur le pronotum, les pattes et l'abdomen." Buysson had, however, but a single worker, one determined by Lewis and given to Buysson by Fernald.

The color differences noted by these authors have no taxonomic significance whatever, a fact that will be made apparent by the examination of any large series of specimens, for in material from a single locality, or even from a single nest, there may be found specimens showing every conceivable intergradation in color pattern between typical *D. diabolica* and *D. d. fernaldi*. The writer has specimens from thirty localities distributed all the way from Maine to California and from British Columbia to southeastern Colorado, and the only deduction that is justifiable on the basis of this material is that western specimens tend to have more yellow on them than do eastern ones, a feature that is characteristic of many widely ranging species of North American Hymenoptera.

A nest of this species collected at Requa, California, on June 27, 1922, contained 39 workers of which 20 had had the propodeum black, 7 had but a trace of yellow present and 12 had the spots well developed. A nest collected at Dodson, Multnomah County, Oregon, on July 3, 1923, contained 107 workers, 4 males and 3 queens. Of these, 65 workers, 1 male and 2 queens had the propodeum black, 4 workers had a trace of yellow present, and 38 workers, 3 males and 1 queen had the yellow spots more or less well developed. The inhabitants of a third nest, found at Glenbrook, Nevada, on September 12, 1923, showed the

¹Saussure, h. de Etud. fam. Vespides, II:138, 1853.

²Lewis, H. W. Trans. Amer. Ent. Soc. 24:173, 1897.

³Cockerell, T. D. A. Ent. News, 12:40, 1901.

⁴Viereck, H. L. Trans. Amer. Ent. Soc., 29:69, 1903.

⁵Buysson, R. du Ann. Soc. Ent. France, 73:573, 1904.

same condition, though the proportions of the color variations were different. Of 60 specimens, 1 male and 2 workers had the propodeum black, 6 workers possessed just a trace of yellow, and 1 male, 1 queen and 49 workers had the spots developed in greater or less degree.

SPIRACLES AS SOUND PRODUCING ORGANS

BY CARL D. DUNCAN

Stanford University, California

During the summer of 1921, while on a collecting trip in western Texas in company with Professor and Mrs. G. F. Ferris of Stanford University, I took a number of specimens of a large grasshopper which produces a sound by means of its second pair of thoracic spiracles. The hopper has been tentatively determined for me by Mr. J. A. G. Rehn of the Philadelphia Academy of Natural Sciences as *Taniopoda picticornis*. Mr. Rehn suggests that this may not be the correct name as the species composing the group to which this one belongs are poorly understood and the synonymy much involved.

The sound is of about the intensity of that resulting when two pieces of writing paper are rubbed together and is produced by the spewing out through the second thoracic spiracles of a small quantity of watery liquid at each exhalation. Many tiny bubbles are formed each time the sound is produced. These vary a great deal in number, being at times hardly noticeable and again forming a mass a good three-sixteenths of an inch in diameter. Immediately after being formed the bubbles disappear, leaving an area around the spiracles that is wet for a second or so.

There are no grounds for doubt as to the mechanism by means of which the sound is produced, for in addition to the fact that it is obviously synchronous with the exhalation of air from the tracheæ and the formation of the bubbles noted, it is exactly the sort of sound that one associates with the spewing of a mixture of air and liquid through a small hole, its intensity varies according to the amount of bubbles produced, and the sound ceases entirely when the production of bubbles ceases, as it does shortly (apparently due to a using up of the supply of liquid available) if the hoppers be continuously stimulated for a time. Moreover, the sound may be produced by nymphs as well as adults, thus eliminating the wings as stridulatory organs, and it may be produced even though the legs of the hoppers be held perfectly still. The sound is apparently under full control of the

insects and as far as I could learn, is produced only when they are disturbed.

These observations were confirmed by Professor and Mrs. Ferris.

The hoppers were taken on mesquite and acacia bushes, on the flowers of which they were feeding, in Brewster County, at the point where the road from Marathon to Glen Springs crosses Tornillo Creek.

A NEW WESTERN DOLICHOPODID

BY M. C. VAN DUZEE

Buffalo, N. Y.

Teterechus spinitarsis M. C. Van Duzee, new species

/achy

Male. Length 5 mm. Face yellow, narrowed in the middle, rounded below. Front green, dulled with white pollen. Antennæ yellow. Third joint darker, small, rounded; first joint large and thick, upper surface with very stiff and very black hairs, which are longer apically and extend beyond the tip of the joint; arista very long and slender, about twice as long as the face, black, its tip widening into a lamella, the basal portion of which is white, apical part velvety black. Orbital cilia wholly black.

Dorsum of thorax green with blue reflections and brown pollen, which becomes gray on the lateral edges; pleuræ with the pollen more yellowish; one large, curved bristle and several stiff black hairs above each fore coxa; scutellum a little flattened on each side, so as to form a slight ridge in the center, with one pair of large and one pair of small bristles on the margin. Abdomen green, quite thickly covered with white pollen and with long black hair; venter with long black hair. Hypopygium green; upper surface of basal half covered with yellow tomentum, which becomes white posteriorly, a cluster of long, stiff, black hairs near the base on the left side and a few long, slender, pale hairs below these; outer lamellæ large, yellow, a little wider than long, the apical edge indented in the middle, so as to form two slightly convex lobes, fringed with pale hairs; they have rather long, black hairs on the surface, especially near the edges, inserted in minute black dots; the inner appendages are a pair of yellow, rather long, nearly bare organs; another pair of yellow organs, half as long as the others with two hairs at tip, and a pair of stout, black hooks near the base.

Fore coxæ yellow, distinctly blackened at extreme base, anterior surface covered with yellow pollen and black hairs, which are longer near the base; without bristles at tip. Middle coxæ blackish, their anterior surface yellow from the tip to above the middle; this yellow color seems to be caused partly by yellow pollen; front also with many black bristly hairs; hind coxæ wholly blackish. All femora and tibiæ yellow; middle femora slightly blackened at base, hind ones distinctly so; extreme tip of posterior femora and narrow base and tip of their tibiæ black. All femora bare on lower edge; anterior pair with stiff black hairs on posterior surface; middle ones with a row of short black bristles on lower anterior edge; hind femora with one preapical bristle. Fore

tibia with two rows of black bristles above; the bristles on posterior edge slightly flattened, the irregular row on anterior edge more slender; the bristles forming both rows of nearly equal length. Fore tibiae and tarsi covered with silvery white pollen. Middle and hind tibiae not thickened, their bristles rather long. Fore tarsi wholly yellow; middle tarsi black from tip of the first joint; hind tarsi wholly black; all joints of middle and hind tarsi drawn out into a spine at lower apical corner, except the last joint of middle, and last two joints of hind tarsi, which are normal. Joints of fore tarsi 26-14-8-5-9; of middle tarsi 55-24-17-9-13; those of hind tarsi 55-44-28-17-18 fiftieths of a millimeter. Calypsters and halteres pale yellow, cilia of the former black.

Wings nearly hyaline, without a spot at tip; last section of fourth vein bent near its basal third; third and fourth veins approaching each other at tip; last section of fifth vein scarcely as long as the cross-vein.

Described from one male taken in the Giant Forest, Tulare County, California, July 16, 1923, by C. L. Fox, at an altitude of 9,000 feet.

Type No. 1596 in the collection of the California Academy of Sciences.

Although this is very much like the *sanus* O. S., I think it is no doubt distinct. They are alike in the form of hypopygium and its appendages, the wings are almost alike, also the general color of the legs, still the color of these differ, the middle femora in *sanus* being more decidedly infuscated at base and the hind ones have the black much more extended; base of hind tibiae sharply black in this new form and wholly yellow in *sanus*. The fore coxae in *sanus* have several quite large bristles near the tip on outer edge of anterior surface, in this form there are no bristles on the fore coxae. The bristles of the fore tibiae are very different in the two forms: in *spinitarsis* the posterior row are of very nearly equal length throughout, the anterior row has the bristles irregularly placed and not longer than those of the posterior row, while in *sanus* the bristles of the anterior row are nearly twice as long as those of posterior row, the apical bristles of which are shorter than those near the base. The lamellæ of the arista are slightly more elongated and more gradually tapering at base in the new species, still this would not be noticed unless the two were seen together. Although the middle and hind tarsi of *sanus* have little bristles at the tips of the joints, they do not have the large spine that is very characteristic of this new species.

ECONOMIC NOTES

BY E. O. ESSIG

University of California, Berkeley, Calif.

The small gray weevil, *Melanomorphus sordidus* (Horn) (*Amnesia*), was taken in great numbers in the commercial currant patches near Hayward, California, in April, 1924. So abundant were they that the bushes on about two acres were almost entirely stripped of their bark. The adults were determined by Dr. E. C. Van Dyke.

The thistle butterfly, *Vanessa cardui* (Linn.), and the malva butterfly, *V. caryæ* (Hbn.), have been exceedingly abundant in Central and Southern California this spring. Large migrations have apparently been due to the short rainfall and the drying up of much of the natural breeding grounds. Many cultivated plants have been infested by the caterpillars. Of the two species, the former appears to have been the most numerous.

Very serious injury to pear trees has been wrought by the hibernating form of the pear leaf blister mite, *Eriophyes pyri* (Pagen.), during the past winter. The warm period during February caused unusual feeding activity of the mites, which, in many orchards, completely destroyed the whole interior of the buds, resulting in considerable damage in many parts of California. The recommended November sprayings were delayed until December and January on account of lack of rain, and were applied too late for control. This is a clear case illustrating the importance of the early fall control of this pest.

Mr. F. H. Wymore is securing some very fundamental and important data relative to the habits and control of the garden centipede, *Scutigera immaculata* (Newport). This minute animal is a serious pest in the asparagus fields of California and is becoming increasingly important as a garden and field crop pest in many of the Western States. Flooding and soil fumigants are giving some very satisfactory results.

THE PAN-PACIFIC ENTOMOLOGIST

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E. P. VAN DUZEE, Editor

F. E. BLAISDELL, M. D., Treasurer

EDITORIAL ANNOUNCEMENT

For some time the entomologists of the west coast region have felt the need of an organ representing their special branch of scientific research. For a few years the *Pomona Journal of Entomology* supplied this want in a measure, but it soon became more of an institutional publication, with entomology as but one interest among a number of others. Prof. C. F. Baker's *Invertebrata Pacifica* was of necessity too restricted in its interests to fully supply the need. In the earlier years such journals as *Zoe* and the *West American Scientist* published many papers on insects and in a degree were representative of the entomological work being done on the west coast. For some time past, however, the principal medium of entomological publication in the west has been through the various scientific societies and institutions. Foremost among such institutional publications is the *Proceedings of the California Academy of Sciences*, which, during certain periods, has devoted a considerable portion of its pages to entomological material. Other west coast societies giving space in their publications to matter relating to insects are the Southern California Academy of Sciences, the San Diego Society of Natural History, the Lorquin Natural History Club, the Pacific Coast Entomological Society, the Entomological Society of British Columbia and the British Columbia Provincial Museum of Natural History at Victoria. Certain universities and colleges have also devoted a portion of their publication funds to entomological papers, among which may be mentioned the University of California, Stanford University, the State College of Washington at Pullman, and others. These organs of publication have at best accounted for but a portion of the output of the entomological workers in the west, the largest percentage having always been handled by the eastern entomological serials. A few years ago an effort was made to start an entomological journal here, to be called the *Pacific Coast Entomologist*, but the uncertainty of the war conditions then developing made the undertaking inadvisable at that time. Now,

however, our western workers feel that the time is ripe for launching a regular entomological periodical which shall adequately represent the work being done in the west, and have very loyally put their hands into their own pockets for the funds to assure the new journal a proper start, the organization of this work having been undertaken by a special publication committee of the Pacific Coast Entomological Society. In addition to the funds so raised the Council of the California Academy of Sciences, following the broad-minded policy characteristic of that institution, has agreed to extend to the new venture a very considerable financial backing. A similar action has been taken by the officials of Stanford University, and is under consideration by other institutions.

This financial backing cannot be considered in the light of a permanent endowment, and the new journal must depend to quite an extent upon the support of entomological workers and scientific institutions and libraries, not only in the west but throughout the east and in other countries, and all such are respectfully requested to send in their subscriptions on the blank forms enclosed in this initial number. The subscription price has been fixed at \$2 per year of four quarterly numbers, each number to contain 48 pages. If this journal meets with the encouragement it hopes to receive in the form of subscriptions, it is the plan of the publication committee to increase the number of pages, and possibly later a more frequent issue may be possible.

It is with some diffidence that the committee has adopted the rather ambitious sounding title of *Pan-Pacific Entomologist*, but, situated as we are upon the threshold of the great Pacific region, which, while partially served by the *Proceedings of the Hawaiian Entomological Society* and the *Philippine Journal of Science*, is without adequate representation in the field of entomological journalism, we feel it almost incumbent upon us to cover that field as well as we can. We must therefore look to the entomologists in that great and scattered field, for their support in contributions, both of funds and of papers for publication, dealing with the insects of their region, to the end that this journal may really be worthy of its title.

PERSONALS

Mr. Frederick Muir, of the Hawaiian Sugar Planters' Association at Honolulu, and family, are spending the months of June and July at Fallen Leaf Lake Lodge, near Lake Tahoe, California.

Mr. C. L. Fox will spend the months from May to July collecting in the region from Klamath Falls, Oregon, north to The Dalles.

Dr. Edwin C. Van Dyke will have charge of the summer field class in entomology of the University of California, during the months of June and July. His camp will be associated with that of the forestry students of the University of California at Meadow Valley, near Quincy, Plumas County, California.

Prof. W. B. Herms left Berkeley on April 10th for the Fanning Islands, where he is to spend some months investigating the insect fauna of the cocoanuts. He will also make as complete a biological survey as possible of the islands. Mr. Harold Kirby, a graduate student, is accompanying him.

Mr. W. W. Henderson, President of Brigham Young College at Logan, Utah, took his Ph.D. degree this summer at the University of California. Mr. Henderson's special investigations have had to do with the Orthoptera of Utah.

Mr. and Mrs. Walter M. Giffard of Honolulu have been spending some weeks in San Francisco. Mr. Giffard is engaged upon a monographic revision of the Hawaiian species of *Oliarus*, a difficult complex of closely related species, as found on those islands.

It is with regret that we have to chronicle the death of Prof. A. A. Lovett at his home at Corvallis, Oregon. He died April 25th of complications following an attack of septic sore throat. Professor Lovett was born August 23, 1885, at Neal, Kansas. He was graduated from the Oklahoma Agricultural and Mechanical College, and was assistant professor in charge of the department of entomology at that college before his appointment to the staff of the Oregon Agricultural College. He was an active productive worker in economic entomology, but also found time to do excellent systematic work on the Diptera, his special interest being with the family Syrphidæ.

Professor and Mrs. T. D. A. Cockerell of the University of Colorado, arrived in San Francisco on June 16th. Mrs. Cockerell is to leave shortly for a cruise to Papeete and New Zealand, returning by way of Samoa, while Professor Cockerell remains to work over the bees in the collection of the California Academy of Sciences, going on in July to the meetings of the Pan-Pacific Conference at Honolulu.

Another welcome visitor at the Academy of Sciences was Dr. J. M. Aldrich of the National Museum, Washington, D. C., who arrived June 18th, and is to spend a few days studying the Diptera in the Academy collection of insects.